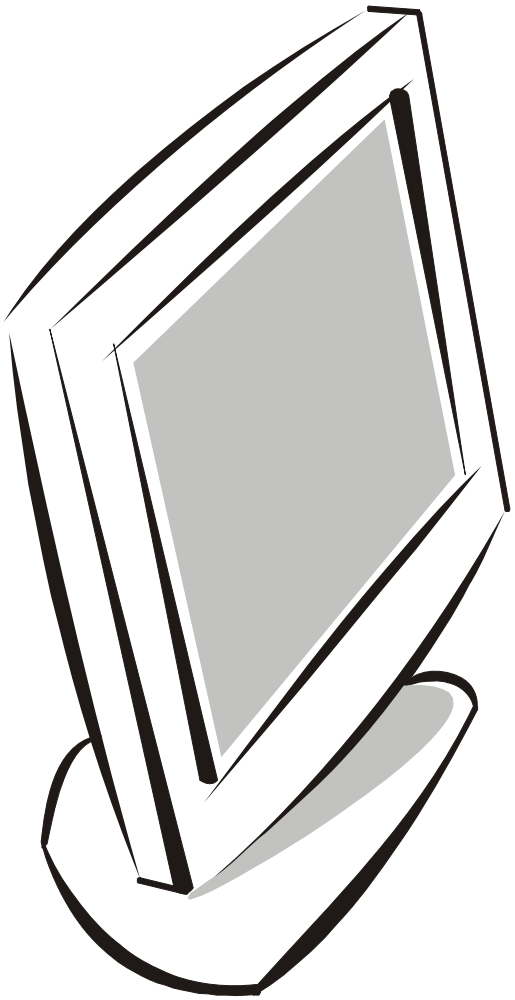
SERVICE MANUAL

17" LCD Monitor

LM730



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1. SPECIFICATIONS FOR LCD MONITOR

1-1 General specifications

1. LCD-Panel :
   Active display area 17 inches diagonal
   Pixel pitch 0.264 mm x 0.264 mm
   Pixel format 1280 x 1024 RGB vertical stripe arrangement

2. Display Color :
   6-bit, 16.2 million colors

3. External Controls :
   Power On/Off, Menu-key, Auto key, Left key, Right key
   OSD menu Controls
   Contras , Brightness, Auto Center, Focus, Clock , H/V-position , DOS mode select, R/G/B, Color-(7200K,6500K), Languages, Reset

4. Input Video Signal :
   Analog-signal 0.7Vpp
   Video signal termination impedance 75 OHM

5. Scanning Frequencies :
   Horizontal: 30 KHz - 83 KHz
   Vertical: 55 Hz – 75 Hz
   Pixel clock: 135 MHz

6. Factory Preset Timing : 17
   User Timings : 13
   Input signal tolerance : H tolerance ± 1 K, V tolerance ± 0.5 Hz

7. Input Power Source :
   Switching Mode Power Supply
   AC 100 – 240 V, 50/60 Hz Universal Type

8. Operating Temperature : 5°C - 40°C Ambient
   Non-operating Temperature : 5°C - 40°C

9. Humidity :
   Operating : 10% to 85% RH (non-condensing)
   Non Operating : 5% to 85%RH (38.7℃ maximum wet bulb temperature)

10. Weight : 7.6 kg

11. External Connection : 15Pin D-type Connector, AC power-Cord

12. View Angle : x-axis right/left = 70, y-axis up/down = 45 ,65

13. Outside dimension : Width x Height x Thickness = 407x 434 x 173 mm

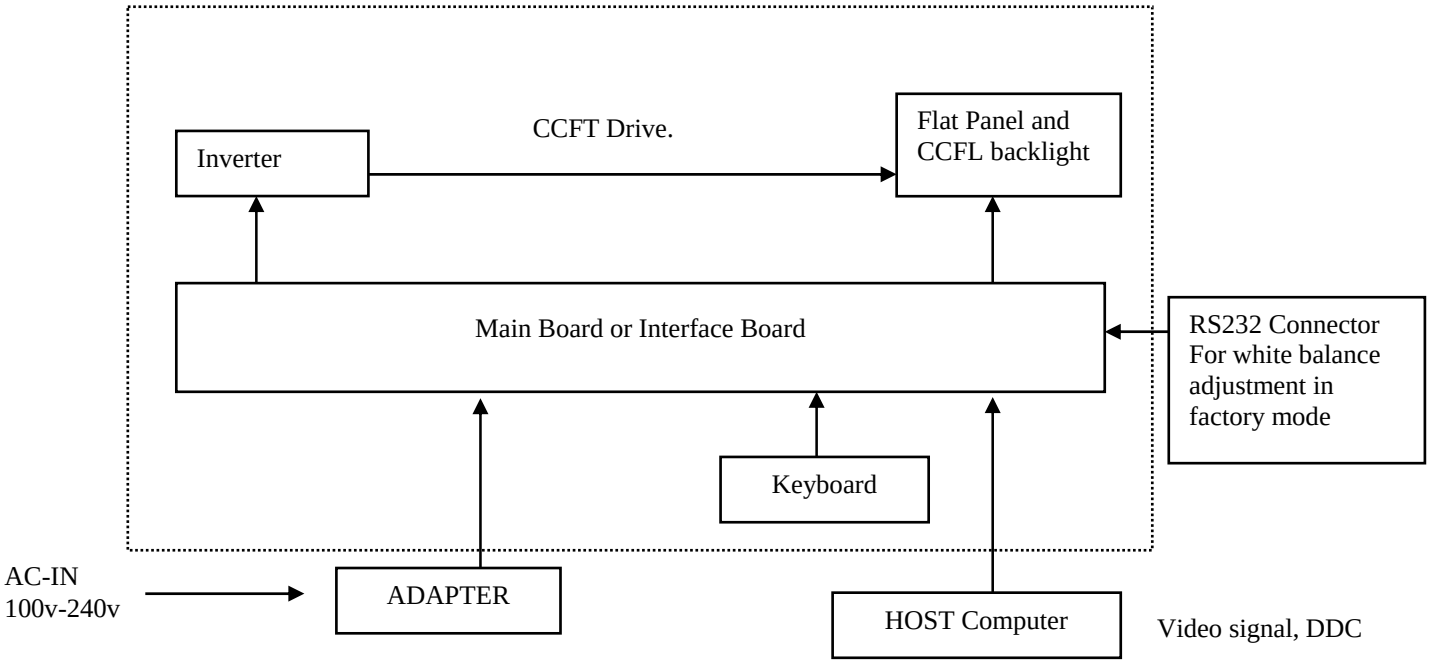
14. Plug and Play : VESA DDC1/DDC2B

15. Power saving : VESA DPMS

1-2 LCD MONITOR DESCRIPTION

The LCD MONITOR will contain an main board, an Inverter module, keyboard, External Adapter which house the flat panel control logic, brightness control logic, DDC and DC-DC conversion
The Inverter module will drive the backlight of panel .
The Adapter will provides the 12V DC-power 4.16 Amp to Main-board,and Inverter module .

Monitor Block Diagram



1-3 Interface Connectors

(A) AC-Power Cable
(B) Video Signal Connectors and Cable
(C) External Adapter

2. PRECAUTIONS AND NOTICES

2-1 ASSEMBLY PRECAUTION

(1) Please do not press or scratch LCD panel surface with anything hard. And do not soil LCD panel surface by touching with bare hands (Polarizer film, surface of LCD panel is easy to be flawed)
In the LCD panel, the gap between two glass plates is kept perfectly even to maintain display characteristic and reliability. If this panel is subject to hard pressing, the following occurs :
(a) Uniform color (b) Orientation of liquid crystal becomes disorder
(2) Please wipe out LCD panel surface with absorbent cotton or soft cloth in case of it being soiled.
(3) Please wipe out drops of adhesive like saliva and water in LCD panel surface immediately.
They might damage to cause panel surface variation and color change.
(4) Do not apply any strong mechanical shock to the LCD panel.

2-2 OPERATING PRECAUTIONS

(1) Please be sure to unplug the power cord before remove the back-cover. (be sure the power is turn-off)
(2) Please do not change variable resistance settings in MAIN-BOARD, they are adjusted to the most suitable value. If they are changed, it might happen LUMINANCE does not satisfy the white balance spec.
(3) Please consider that LCD backlight takes longer time to become stable of radiation characteristic in low temperature than in room temperature.
(4) Please pay attention to displaying the same pattern for very long-time. Image might stick on LCD.

2-3 STORAGE PRECAUTIONS

(1) When you store LCD for a long time, it is recommended to keep the temperature between 5℃-40℃ without the exposure of sunlight and to keep the humidity less than 85% RH.
(2) Please do not leave the LCD in the environment of high humidity and high temperature such as 60℃ 90%RH.
(3) Please do not leave the LCD in the environment of low temperature; below -15℃.

2-4 HIGH VOLTAGE WARNING

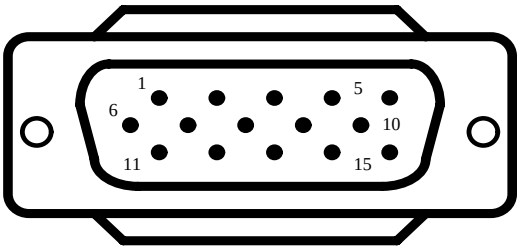
The high voltage was only generated by INVERTER module, if carelessly contacted the transformer on this module, can cause a serious shock. (the lamp voltage after stable around 600V, with lamp current around 6.5mA, and the lamp starting voltage was around 1650V, at Ta=25℃)

3. OPERATING INSTRUCTIONS

This procedure gives you instructions for installing and using the LCD monitor display.

1. Position the display on the desired operation and plug–in the power cord into External Adapter AC outlet. Three-wire power cord must be shielded and is provided as a safety precaution as it connects the chassis and cabinet to the electrical conduct ground. If the AC outlet in your location does not have provisions for the grounded type plug, the installer should attach the proper adapter to ensure a safe ground potential.

2. Connect the 15-pin color display shielded signal cable to your signal system device and lock both screws on the connector to ensure firm grounding. The connector information is as follow:



15 - Pin Color Display Signal Cable

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1.	RED	9.	5V power from VGA-card
2.	GREEN	10.	GND
3.	BLUE	11.	SYNC. GND
4.	GND	12.	SDA
5.	GND	13.	HORIZ. SYNC
6.	GND-R	14.	VERT. SYNC
7.	GND-G	15.	SCL
8.	GND-B		

3. Apply power to the display by turning the power switch to the "ON" position and allow about thirty seconds for Panel warm-up. The Power-On indicator lights when the display is on.
4. With proper signals feed to the display, a pattern or data should appear on the screen, adjust the brightness and contrast to the most pleasing display, or press auto-key to get the best picture-quality.
5. This monitor has power saving function following the VESA DPMS. Be sure to connect the signal cable to the PC.
6. If your LCD monitor requires service, it must be returned with the power cord & Adapter.

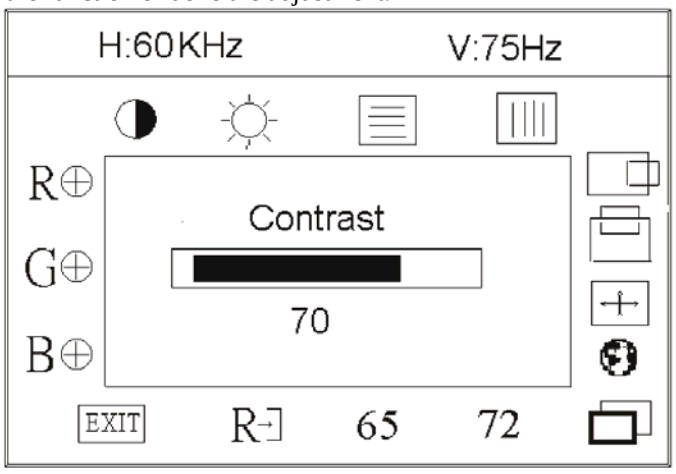
4. ADJUSTMENT

4-1 ADJUSTMENT CONDITIONS AND PRECAUTIONS

Adjustments should be undertaken only on following function : Contras , Brightness, Black level, Phase, Clock , H/V-position , Languages, Color-(7200,6500,User), Auto level, OSD-position, Languages, Reset

4-2 ADJUSTMENT METHOD

Press MENU button to activate OSD Menu or make a confirmation on desired function, Press Left/Right button to select the function or done the adjustment.



1. White-Balance, Luminance adjustment
   Approximately 30 minutes should be allowed for warm up before proceeding white balance adjustment.

   Before started adjust white balance ,please setting the Chroma-7120 **MEM. Channel 1 to 7200** color and **MEM. channel 2 to 6500** color, (our 7200 parameter is x = 302 ±20, y = 319 ±20, Y = 200 ±20cd/m2 and 6500 parameter is x = 313 ±20, y = 329 ±20, Y = 200 ±20 cd/m^2)

   How to setting MEM.channel you can reference to chroma 7120 user guide or simple use " **SC**" key and " **NEXT**" key to modify x,yY value and use "**ID**" key to modify the TEXT description

   Following is the procedure to do white-balance adjust

   Press MENU button during 1 seconds along with plug in the DC-power cord will activate the factory mode, and the OSD screen will located at **left top of panel**.

   I. <u>Bias (Low luminance) adjustment :</u>

   1. Press " AUTO" button , and wait for message " Pass"
   2. Set the contrast on OSD window to the value=45 , color (user)R,G,B set to "**50**"
   3. adjust the **brightness** on OSD until chroma 7120 measurement reach the value Y=240 cd/m^2 ±10 cd/m^2

II. Gain adjustment :

a. adjust 7200 color-temperature

1. Set the Contrast of OSD function to 45 and Adjust Brightness to chroma 7120 Y=240 ±5 cd/m^2
2. Switch the chroma-7120 to **RGB-mode** (with press "MODE" button)
3. Switch the MEM.channel to Channel 01 (with up or down arrow on chroma 7120)
4. The lcd-indicator on chroma 7120 will show x = 302 ±10, y = 319 ±10, Y = 200 ±5 cd/m^2
5. Adjust the Color(user)Mode: RED on OSD window, until chroma 7120 indicator reached the value R=100
6. Adjust the Color(user)Mode: GREEN on OSD window, until chroma 7120 indicator reached the value G=100
7. Adjust the Color(user)Mode: BLUE on OSD window, until chroma 7120 indicator reached the value B=100
8. repeat above procedure (item 5,6,7) until chroma 7120 RGB value meet the torlence =100±2
9. switch the chroma-7120 to **xyY mod**e With press "MODE" button
10. Press Color (7800) on OSD window to save the adjustment result

b. adjust 6500 color-temperature

1 Set the Contrast of OSD function to 45 and Adjust Brightness to chroma 7120 Y=240 ±5 cd/m^2
2 Switch the chroma-7120 to **RGB-mode** (with press "MODE" button)
3 switch the MEM.channel to Channel 02 (with up or down arrow on chroma 7120)
4 The lcd-indicator on chroma 7120 will show x = 313 ±10, y = 329 ±10, Y = 200 ±5 cd/m^2
5 Adjust the Color(user)Mode: RED on OSD window, until chroma 7120 indicator reached the value R=100
6 Adjust the Color(user)Mode: GREEN on OSD window, until chroma 7120 indicator reached the value G=100
7 Adjust the Color(user)Mode: BLUE on OSD window, until chroma 7120 indicator reached the value B=100
8 repeat above procedure (item 5,6,7) until chroma 7120 RGB value meet the tolence =100±2
9 switch the chroma-7120 to **xyY mod**e With press "MODE" button
10 Press Color(6500) on OSD window to save the adjustment result

Turn the POWER-button off to on to quit from factory mode (in USER-mode, the OSD window location was placed at middle of screen)

2. Clock adjustment
   Set the Chroma at pattern 63 (cross-talk pattern) or WIN98/95 shut-down mode (dot-pattern).
   Adjust until the vertical-Stripe-shadow as wide as possible or no visible.
   This function is adjust the PLL divider of ADC to generate an accurate pixel clock
   Example : Hsyn = 31.5KHz Pixel freq. = 25.175MHz (from VESA spec)
   The Divider number is (N) = (Pixel freq. x 1000)/Hsyn
   From this formula, we get the Divider number, if we fill this number in ADC register (divider register), the PLL of ADC will generate a clock which have same period with above Pixel freq.(25.175MHz) the accuracy of this clock will effect the size of screen.(this clock was called PIXEL-CLOCK)

3. Focus adjustment
   Set the Chroma at pattern 63 (cross talk pattern) or WIN98/95 shut down mode (dot-pattern).
   Adjust the horizontal interference as less as possible
   This function is adjust the phase shift of PIXEL-CLOCK to acquire the right pixel data .
   If the relationship of pixel data and pixel clock not so match, we will see the horizontal interference on screen ,we only find this phenomena in crosstalk pattern or dot pattern , other pattern the affect is very light

4. H/V-Position adjustment
   Set the Chroma to pattern 1 (crosshatch pattern) or WIN98/95 full-white pattern confirm above item 2 & 3 functions (clock & focus) was done well, if that 2 functions failed, the H/V position will be failed too.
   Adjust the four edge until all four-edges are visible at the edge of screen.

5. LANGUAGE function
   There have 5 language for selection, press “MENU” to selected and confirm , press “ LEFT” or “ RIGHT” to change the kind of language (English , Deutch , Francais, Espanol, Italian)

6. Reset function
   Clear each old status of auto-configuration and re-do auto-configuration (for all mode)
   This function also recall 7200 color-temperature , if the monitor status was in “ Factory-mode” this reset function will clear Power-on counter (backlight counter) too.
7. OSD-LOCK function
   Press Left & Right key during switching on the monitor, the access to the OSD is locked, user only has access to “ Contrast, Brightness, Auto-key “.
   If the operator pressed the Left & Right during switching on the monitor again , the OSD is unlocked.

4-3 FRONT PANEL CONTROL KNOBS

Power button : Press to switch on or switch off the monitor.
Auto button : to perform the automatic adjustment from CLOCK, FOCUS, H/V POSITION, but no affect the color-temperature
Left/Right button : select function or do an adjustment.
MENU button : to activate the OSD window or to confirm the desired function

5. CIRCUIT-DESCRIPTION

5-1 SPECIAL FUNCTION WITH PRESS-KEY

A). press **Menu** button during 2 seconds along with **plug-in the DC Power cord**:
That operation will set the monitor into "Factory- mode", in Factory mode we can do the White balance adjustment with RS232
In Factory mode, OSD-screen will locate in left top of screen.
Press POWER-button off to on once will quit from factory mode and back to user-mode.

B). Press **both Left & Right button along with Power button** off to on once will activate the OSD-LOCK function, repeat this procedure will disable OSD-LOCK
In OSD-LOCK function, all OSD function will be lock , except Contrast and Brightness

OSD-INDEX EXPLANATION

1. **CABLE NOT CONNECTED**: Signal-cable not connected.

2. **INPUT NOT SUPPORT**:
   a. INPUT frequency out of range: H > 83kHz, v > 75Hz or H < 28kHz, v < 55Hz
   b. INPUT frequency out of VESA-spec. (out of tolerance too far)

5-2 CIRCUIT FUNCTION DESCRIPTION

1. U200,GMZAN2 (all-in-one chip solution for ADC, OSD, scalar and interpolation) :
   USE for computer graphics images to convert analog RGB data to digital data with interpolation process, zooming, generated the OSD font , perform overlay function and generate drive-timing for LCD-PANEL.

2. U302,89C51RD2 (PHILIPS- MCU, type 8052 series with 64k Rom-size and 512 byte ram) :
   Use for calculate frequency, pixel-dot , detect change mode, rs232-communication, power-consumption control, OSD-index warning , …etc.

3. U203,24LC21 (MicroChip IC) :
   EEPROM type, 1K ROM-SIZE, for saving DDC-CONTENT.

4. U300,24C16 (ATMEL IC) :
   EEPROM type, 16K ROM-SIZE, for saving AUTO-config data, White-balance data, and Power-key status and Backlight-counter data.

5. U304,LM2569S(NS brand switching regulator 12V to 5V with 3A load current) .

6. U305,AIC 1084-33CM (AIC brand linear regulator 5V to 3.3V)

7. U905,RT9164(Linear regulator 5V to 2.5V)

8. U600,U601,LVDS (use NOVATEK NT7181F)
   Convert the TTL signal to LVDS signal , the advantage of LVDS signal is : the wire can be lengthen and eliminate wire number , low EMI .LVDS signal is high frequency but low voltage, only 0.35 VPP ,the frequency is seven times higher than TTL

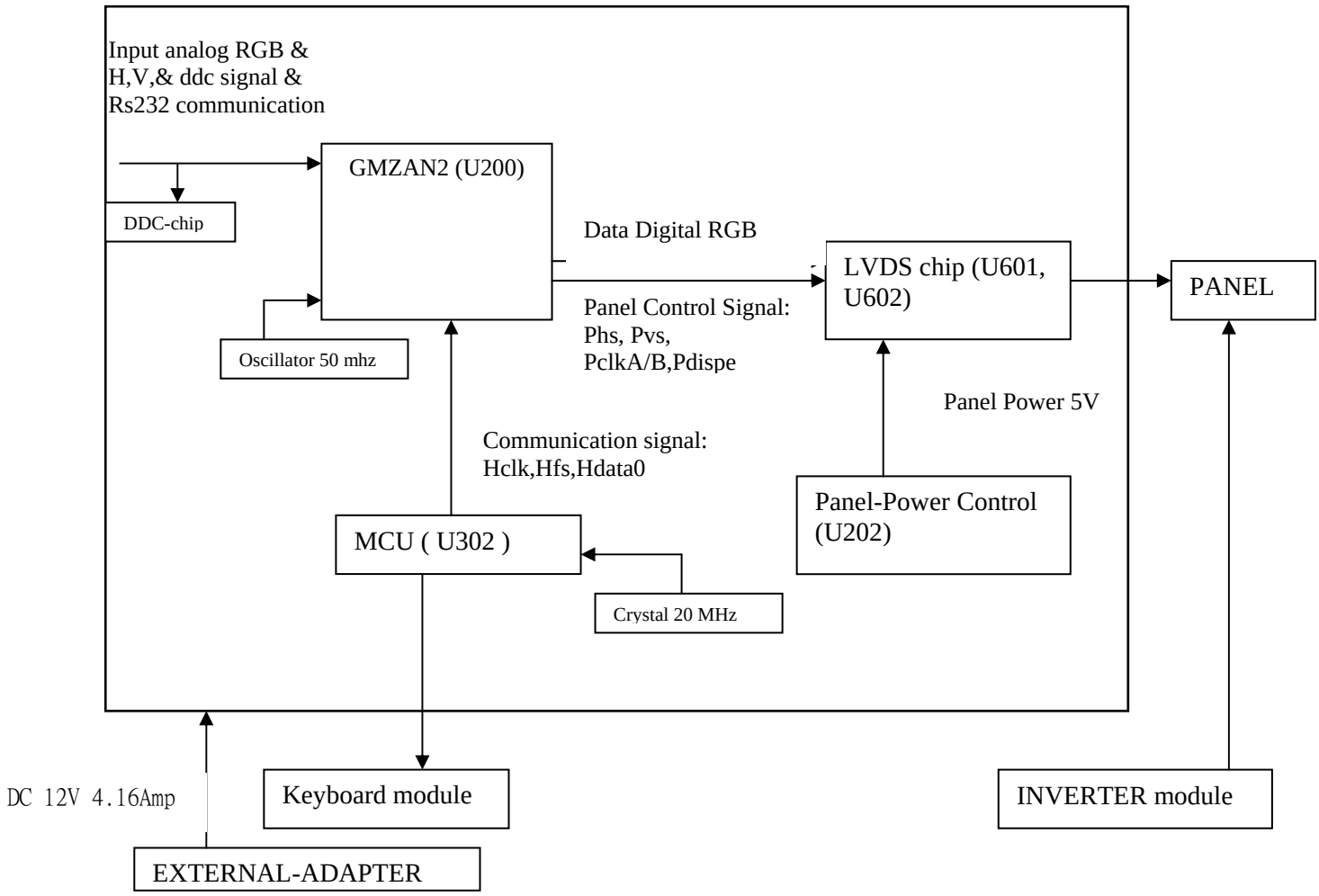
9. U401, 74F14D(Schmitt triggger)
   The 74F14 contains six logic inverters which accept standard TTL input signals and provide standard TTL Output levels

MODULE-TPYE COMPONENT:

1. ADAPTER : CONVERSION-module to convert AC 110V-240V to 12VDC, with 4.16 AMP

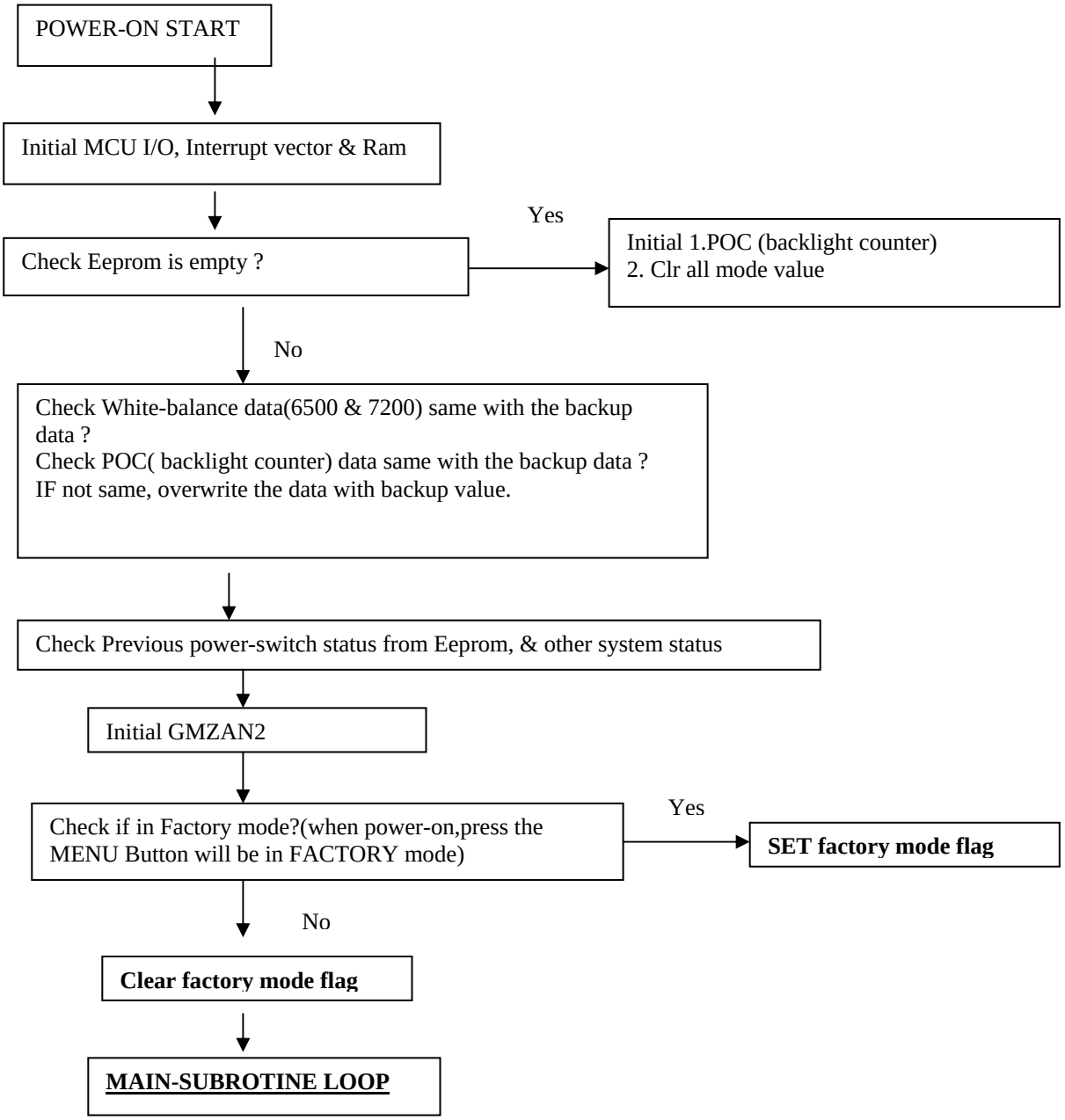
2. INVERTER : CONVERSION-module to convert DC 12V to High-Voltage around 1650V, with frequency 30K-80Khz, 5.6mA-13mA

Main-board Block diagram

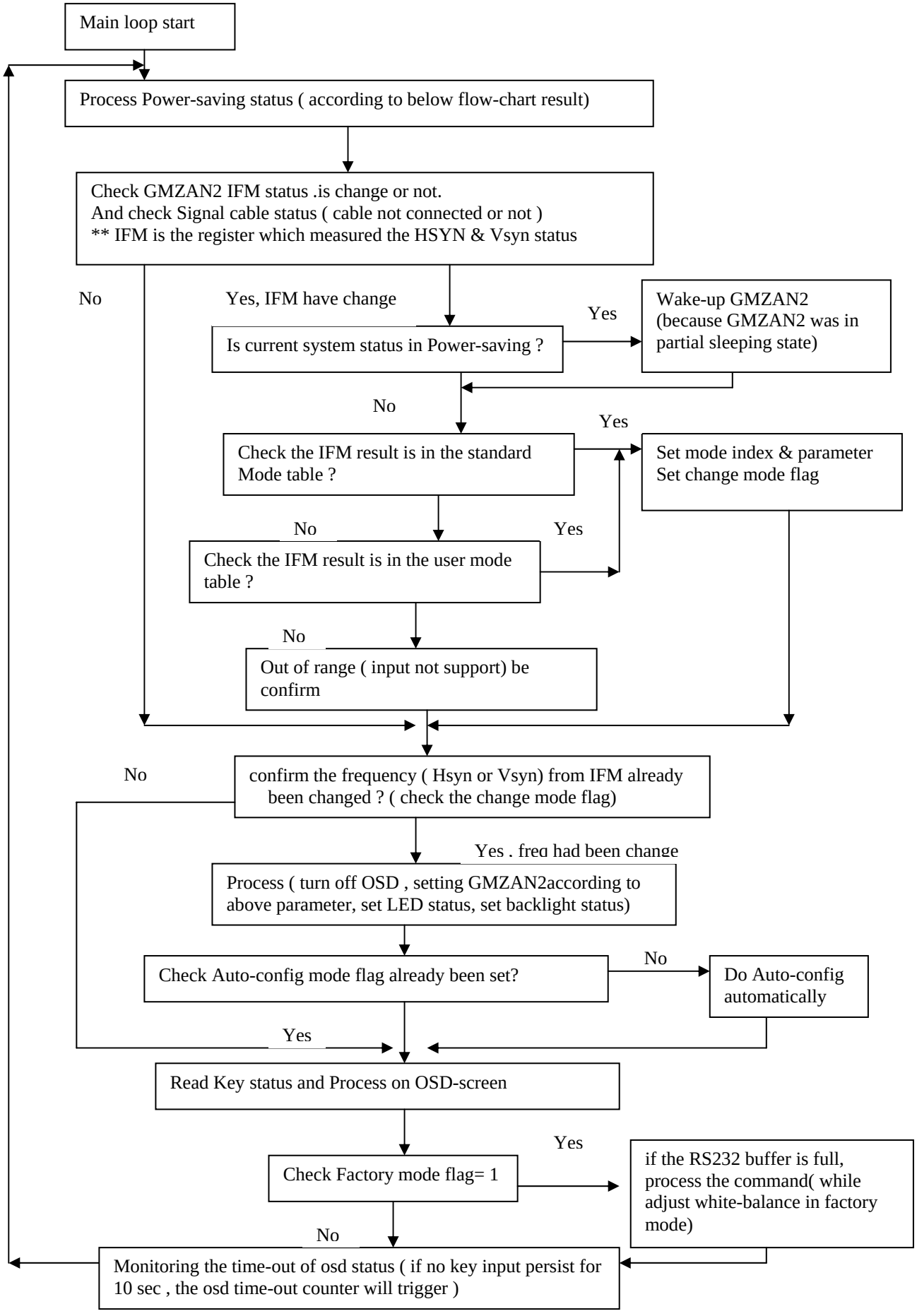


5-3 SOFTWARE FLOW CHART

I. Power-On Subroutine CHART


POWER-ON START
Initial MCU I/O, Interrupt vector & Ram
Check Eeprom is empty ?
Yes
Initial 1.POC (backlight counter)
2. Clr all mode value
No
Check White-balance data(6500 & 7200) same with the backup data ?
Check POC(backlight counter) data same with the backup data ?
IF not same, overwrite the data with backup value.
Check Previous power-switch status from Eeprom, & other system status
Initial GMZAN2
Check if in Factory mode?(when power-on,press the MENU Button will be in FACTORY mode)
Yes
SET factory mode flag
No
Clear factory mode flag
MAIN-SUBROTINE LOOP

II. MAIN SUBROTINE LOOP

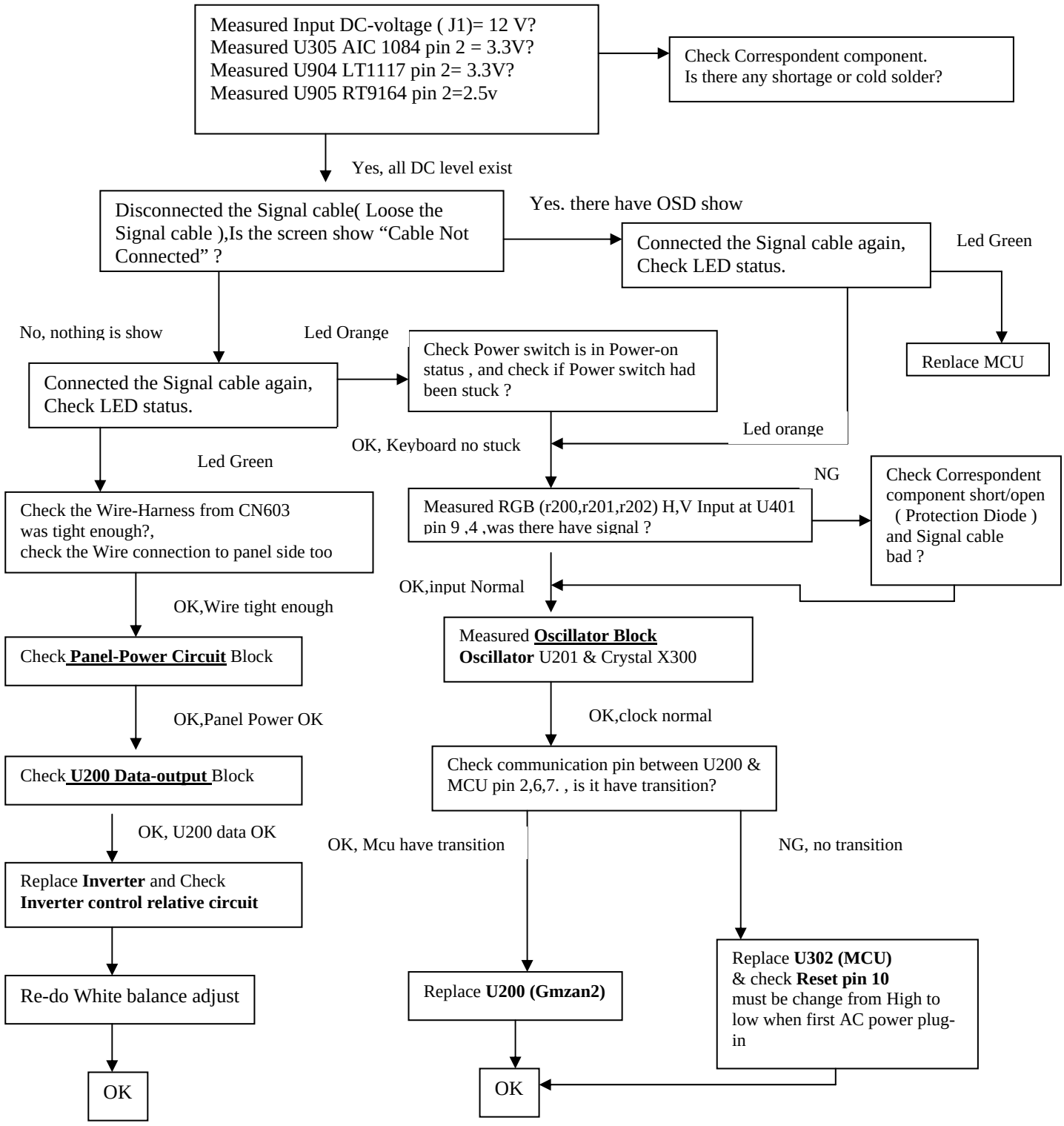

Main loop start
Process Power-saving status (according to below flow-chart result)
Check GMZAN2 IFM status .is change or not.
And check Signal cable status (cable not connected or not)
** IFM is the register which measured the HSYN & Vsyn status
No
Yes, IFM have change
Is current system status in Power-saving ?
Yes
Wake-up GMZAN2
(because GMZAN2 was in
partial sleeping state)
No
Yes
Check the IFM result is in the standard
Mode table ?
Set mode index & parameter
Set change mode flag
No
Yes
Check the IFM result is in the user mode
table ?
No
Out of range (input not support) be
confirm
No
confirm the frequency (Hsyn or Vsyn) from IFM already
been changed ? (check the change mode flag)
Yes . freq had been change
Process (turn off OSD , setting GMZAN2according to
above parameter, set LED status, set backlight status)
Check Auto-config mode flag already been set?
No
Do Auto-config
automatically
Yes
Read Key status and Process on OSD-screen
Yes
Check Factory mode flag= 1
if the RS232 buffer is full,
process the command(while
adjust white-balance in factory
mode)
No
Monitoring the time-out of osd status (if no key input persist for
10 sec , the osd time-out counter will trigger)

6 A). INTERFACE-BOARD TROUBLE-SHOOTING CHART

***Use the PC Win 98 white pattern, with some icon on it, and Change the Resolution to 640x480 60 Hz / 31 KHz**
****NOTICE : The free-running freq. of our system is 48 KHz / 60 Hz, so we recommend to use another resolution to do trouble shooting, this trouble shooting is proceed with 640x480 @60Hz 31Khz**

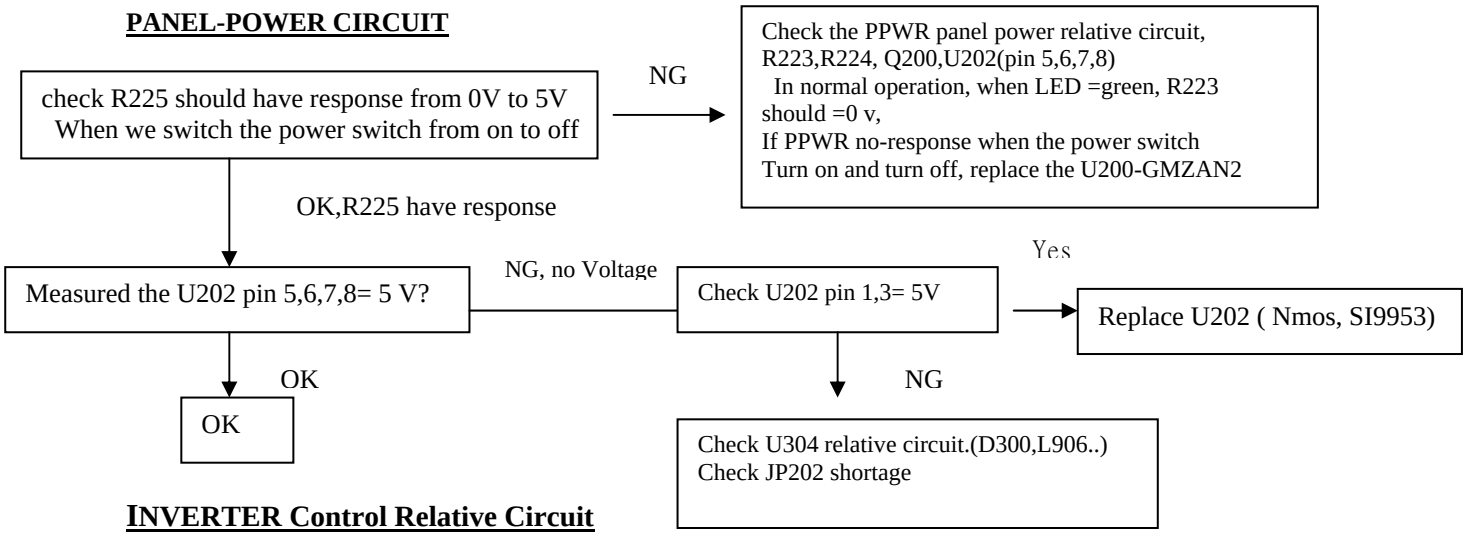
I. NO SCREEN APPEAR

DC-Power Part

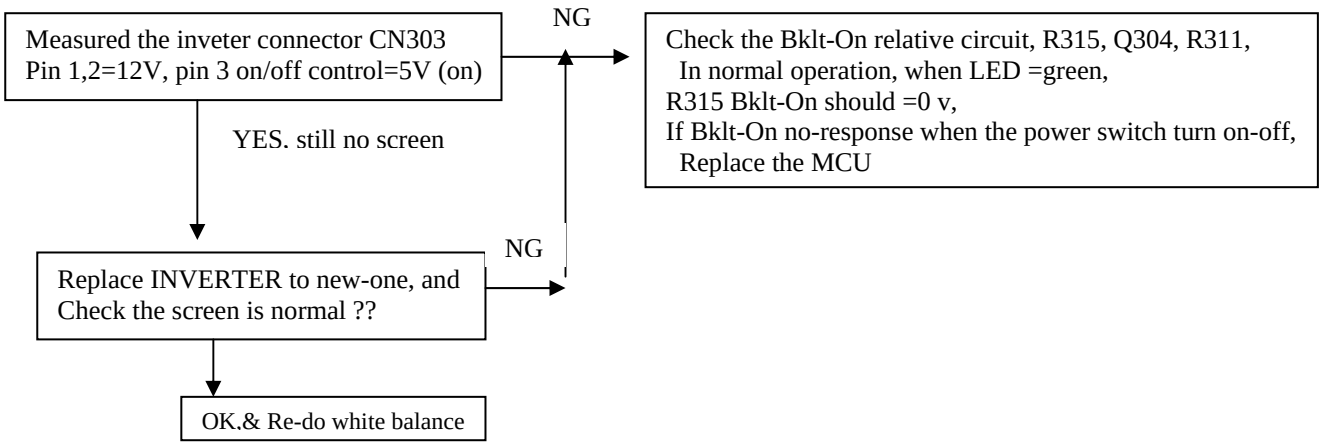

Measured Input DC-voltage (J1)= 12 V?
Measured U305 AIC 1084 pin 2 = 3.3V?
Measured U904 LT1117 pin 2= 3.3V?
Measured U905 RT9164 pin 2=2.5v
Check Correspondent component.
Is there any shortage or cold solder?
Yes, all DC level exist
Disconnected the Signal cable(Loose the Signal cable),Is the screen show "Cable Not Connected" ?
Yes. there have OSD show
Connected the Signal cable again, Check LED status.
Led Green
Replace MCU
No, nothing is show
Led Orange
Connected the Signal cable again, Check LED status.
Check Power switch is in Power-on status , and check if Power switch had been stuck ?
Led orange
OK, Keyboard no stuck
Led Green
Check the Wire-Harness from CN603 was tight enough?, check the Wire connection to panel side too
Measured RGB (r200,r201,r202) H,V Input at U401 pin 9 ,4 ,was there have signal ?
NG
Check Correspondent component short/open (Protection Diode) and Signal cable bad ?
OK,input Normal
OK,Wire tight enough
Check Panel-Power Circuit Block
Measured Oscillator Block
Oscillator U201 & Crystal X300
OK,Panel Power OK
OK,clock normal
Check U200 Data-output Block
Check communication pin between U200 & MCU pin 2,6,7. , is it have transition?
OK, U200 data OK
OK, Mcu have transition
NG, no transition
Replace Inverter and Check Inverter control relative circuit
Replace U200 (Gmzan2)
Replace U302 (MCU) & check Reset pin 10 must be change from High to low when first AC power plug-in
Re-do White balance adjust
OK
OK

Note: 1. if Replace "**MAIN-BOARD**" , Please re-do "DDC-content" programmed & "WHITE-Balance".
2. if Replace " **INVERTER**" only, Please re-do " WHITE-Balance"

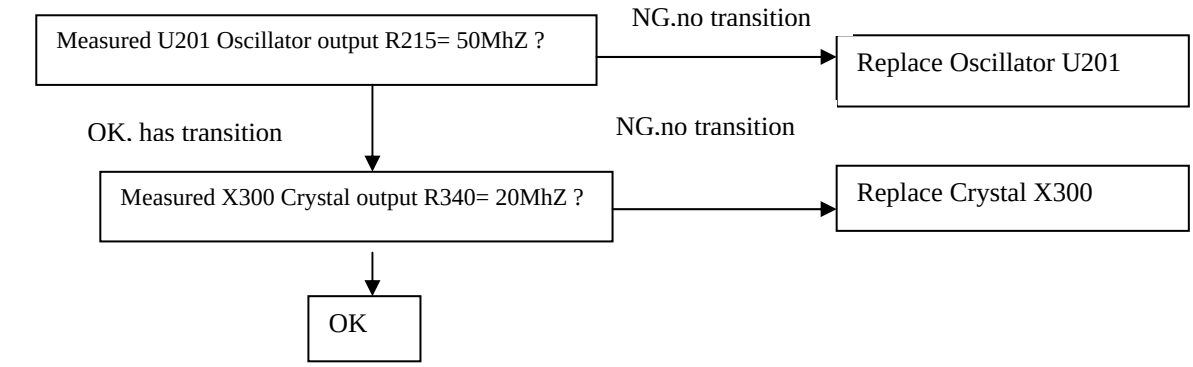
PANEL-POWER CIRCUIT


check R225 should have response from 0V to 5V
When we switch the power switch from on to off
NG
Check the PPWR panel power relative circuit,
R223,R224, Q200,U202(pin 5,6,7,8)
In normal operation, when LED =green, R223
should =0 v,
If PPWR no-response when the power switch
Turn on and turn off, replace the U200-GMZAN2
OK,R225 have response
Measured the U202 pin 5,6,7,8= 5 V?
NG, no Voltage
Check U202 pin 1,3= 5V
Yes
Replace U202 (Nmos, SI9953)
OK
OK
NG
Check U304 relative circuit.(D300,L906..)
Check JP202 shortage

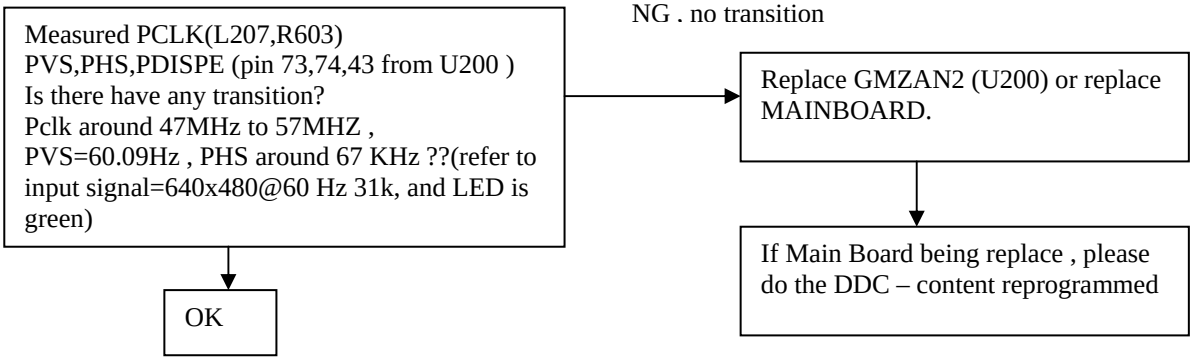
INVERTER Control Relative Circuit


Measured the inveter connector CN303
Pin 1,2=12V, pin 3 on/off control=5V (on)
NG
Check the Bklt-On relative circuit, R315, Q304, R311,
In normal operation, when LED =green,
R315 Bklt-On should =0 v,
If Bklt-On no-response when the power switch turn on-off,
Replace the MCU
YES. still no screen
NG
Replace INVERTER to new-one, and
Check the screen is normal ??
OK.& Re-do white balance

OSCILLATOR BLOCK

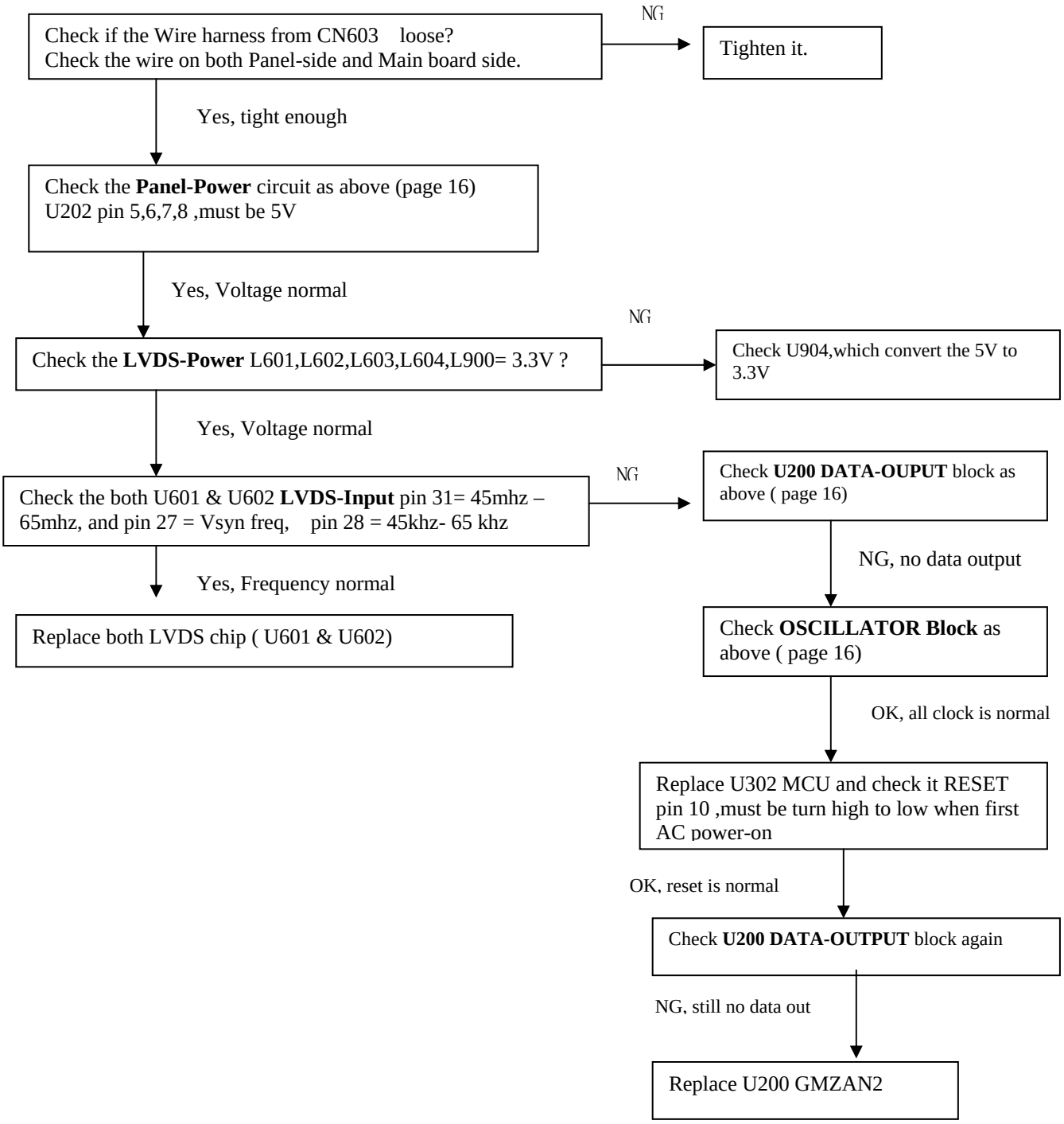


U200-DATA OUTPUT


Measured PCLK(L207,R603)
PVS,PHS,PDISPE (pin 73,74,43 from U200)
Is there have any transition?
Pclk around 47MHz to 57MHZ ,
PVS=60.09Hz , PHS around 67 KHz ??(refer to
input signal=640x480@60 Hz 31k, and LED is
green)
NG . no transition
Replace GMZAN2 (U200) or replace
MAINBOARD.
If Main Board being replace , please
do the DDC – content reprogrammed
OK

II (a) THE SCREEN is Abnormal , stuck at white screen, OSD window can't appear, but keyboard & LED was normal operation.

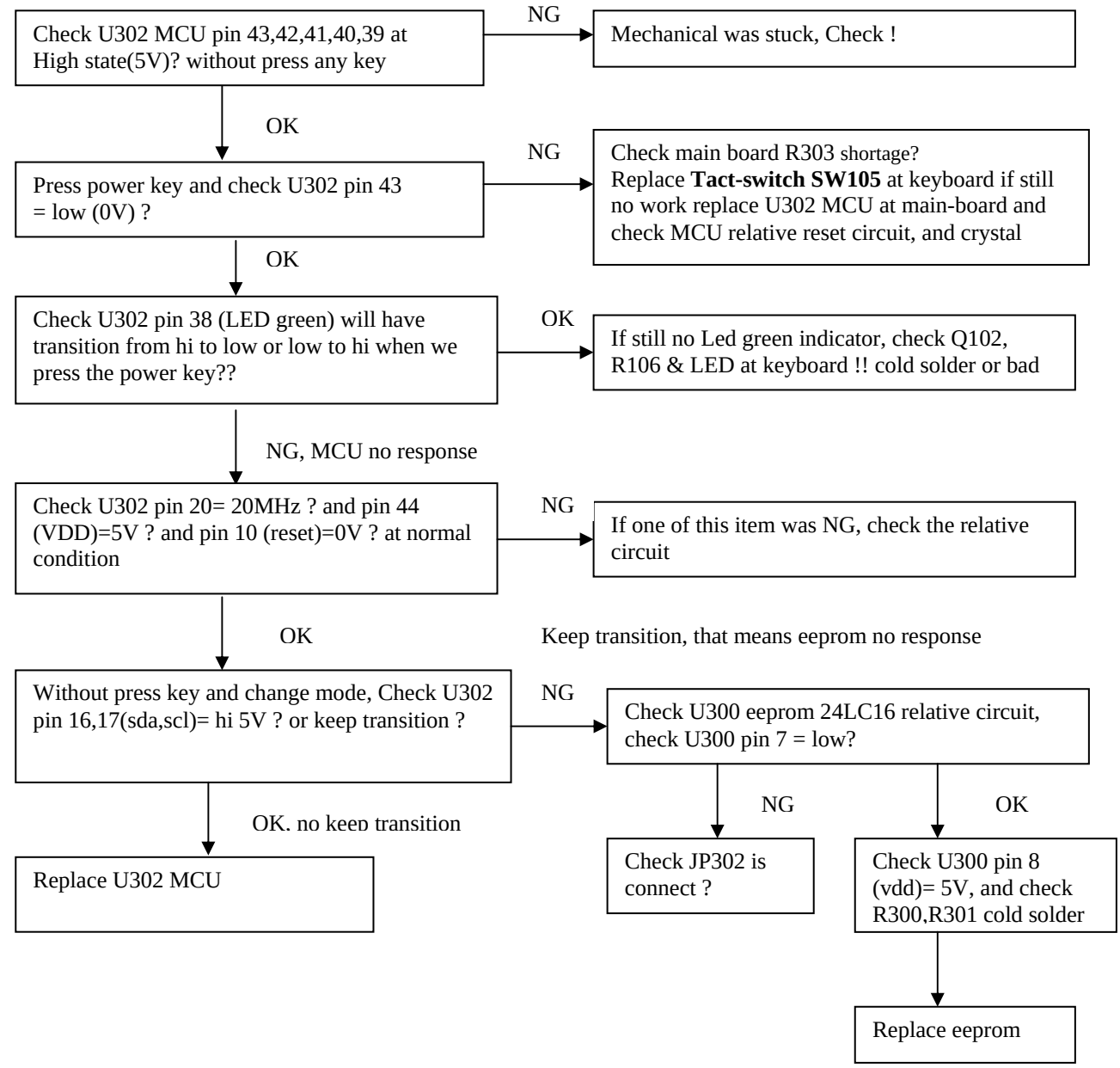
At general, this symptom is cause by missing panel data or panel power, so we must check our wire-harness which connected to panel or the panel power controller (U202)


Check if the Wire harness from CN603 loose?
Check the wire on both Panel-side and Main board side.
NG
Tighten it.
Yes, tight enough
Check the **Panel-Power** circuit as above (page 16)
U202 pin 5,6,7,8 ,must be 5V
Yes, Voltage normal
NG
Check the **LVDS-Power** L601,L602,L603,L604,L900= 3.3V ?
Check U904,which convert the 5V to 3.3V
Yes, Voltage normal
NG
Check the both U601 & U602 **LVDS-Input** pin 31= 45mhz – 65mhz, and pin 27 = Vsyn freq, pin 28 = 45khz- 65 khz
Check **U200 DATA-OUPUT** block as above (page 16)
NG, no data output
Yes, Frequency normal
Replace both LVDS chip (U601 & U602)
Check **OSCILLATOR Block** as above (page 16)
OK, all clock is normal
Replace U302 MCU and check it RESET pin 10 ,must be turn high to low when first AC power-on
OK, reset is normal
Check **U200 DATA-OUTPUT** block again
NG, still no data out
Replace U200 GMZAN2

II. (b)The screen had the Vertical Straight Line, might be stuck in Red, Green, Blue

That symptom is cause by bad Panel issue (might be the Source IC from Panel is cold solder or open loop) so REPLACE THE PANEL TO NEW ONE.

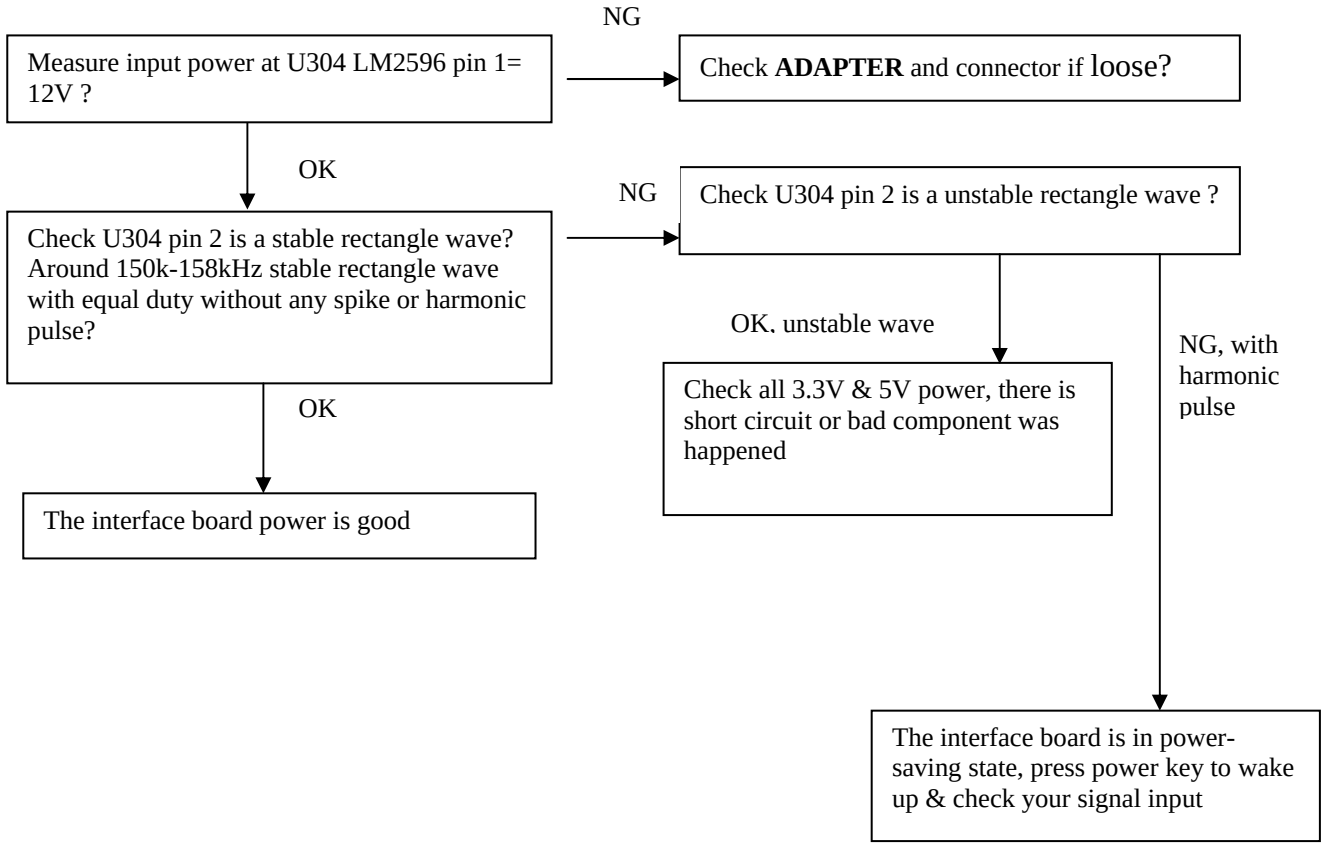
KEYBOARD BLOCK check


Check U302 MCU pin 43,42,41,40,39 at High state(5V)? without press any key
NG
Mechanical was stuck, Check !
OK
Press power key and check U302 pin 43 = low (0V) ?
NG
Check main board R303 shortage? Replace Tact-switch SW105 at keyboard if still no work replace U302 MCU at main-board and check MCU relative reset circuit, and crystal
OK
Check U302 pin 38 (LED green) will have transition from hi to low or low to hi when we press the power key??
OK
If still no Led green indicator, check Q102, R106 & LED at keyboard !! cold solder or bad
NG, MCU no response
Check U302 pin 20= 20MHz ? and pin 44 (VDD)=5V ? and pin 10 (reset)=0V ? at normal condition
NG
If one of this item was NG, check the relative circuit
OK
Keep transition, that means eeprom no response
Without press key and change mode, Check U302 pin 16,17(sda,scl)= hi 5V ? or keep transition ?
NG
Check U300 eeprom 24LC16 relative circuit, check U300 pin 7 = low?
NG
OK
OK. no keep transition
Check JP302 is connect ?
Check U300 pin 8 (vdd)= 5V, and check R300,R301 cold solder
Replace U302 MCU
Replace eeprom

POWER-BLOCK check

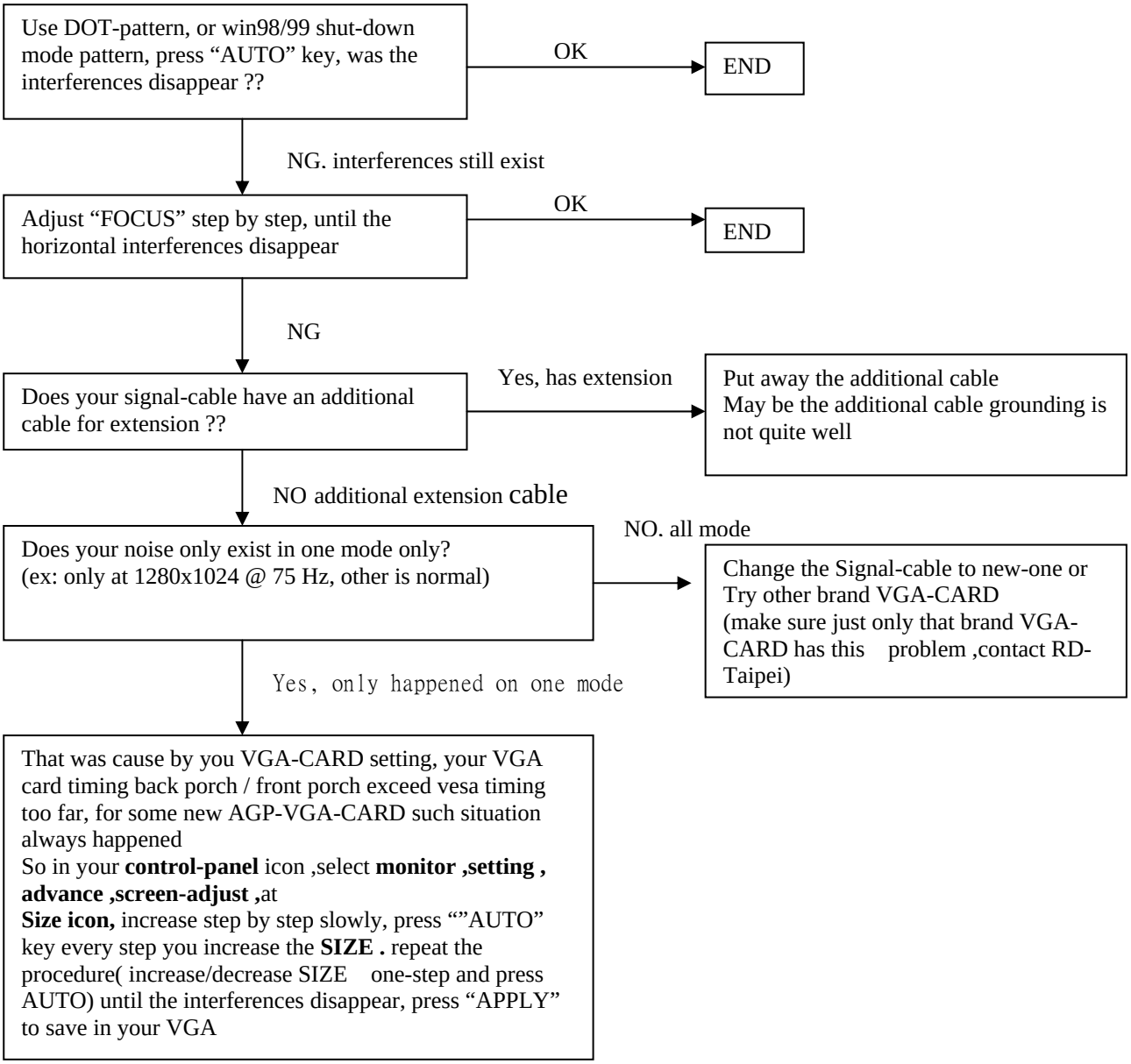
******Note : the Waveform of U304 pin 2 can determined the power situation

1. stable rectangle waveform with equal duty, freq around 150K-158KHz
   that means all power of this interface board is in normal operation
   ,and all status of 5V & 3.3V is working well
2. unstable or uneven rectangle waveform without same duty, that means ABNORMAL operation was happened, check 3.3V or 5V ,if short-circuit or bad component
3. rectangle waveform with large spike & harmonic pulse on front side , means all 3.3v is no load, U200 **Gmzan2** was shut-down, and only U302 **MCU** still working , that means the monitor is in power saving status , all power system is working well .


Measure input power at U304 LM2596 pin 1= 12V ?
NG
Check ADAPTER and connector if loose?
OK
Check U304 pin 2 is a stable rectangle wave? Around 150k-158kHz stable rectangle wave with equal duty without any spike or harmonic pulse?
NG
Check U304 pin 2 is a unstable rectangle wave ?
OK, unstable wave
NG, with harmonic pulse
OK
Check all 3.3V & 5V power, there is short circuit or bad component was happened
The interface board power is good
The interface board is in power-saving state, press power key to wake up & check your signal input

III.ALL SCREEN HAS INTERFERENCES OR NOISE, CAN'T BE FIXED BY AUTO KEY

**** NOTE:** There is so many kind of interferences, 1). One is cause by some VGA-CARD that not meet VESA spec or power grounding too bad that influence our circuit
2).other is cause by external interferences, move the monitor far from electronic equipment.(rarely happened)

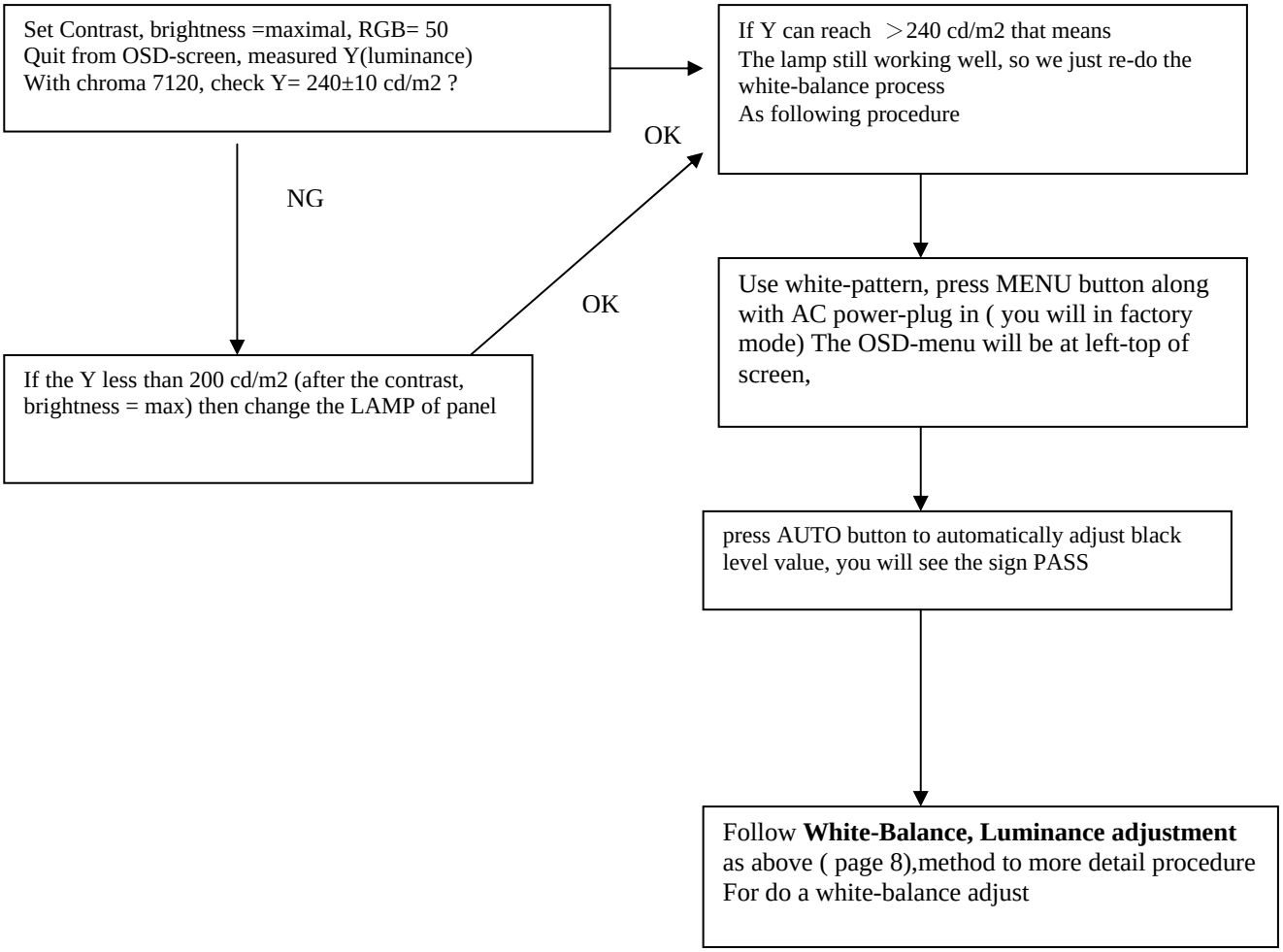

Use DOT-pattern, or win98/99 shut-down mode pattern, press "AUTO" key, was the interferences disappear ??
OK
END
NG. interferences still exist
Adjust "FOCUS" step by step, until the horizontal interferences disappear
OK
END
NG
Does your signal-cable have an additional cable for extension ??
Yes, has extension
Put away the additional cable
May be the additional cable grounding is not quite well
NO additional extension cable
Does your noise only exist in one mode only?
(ex: only at 1280x1024 @ 75 Hz, other is normal)
NO. all mode
Change the Signal-cable to new-one or Try other brand VGA-CARD
(make sure just only that brand VGA-CARD has this problem ,contact RD-Taipei)
Yes, only happened on one mode
That was cause by you VGA-CARD setting, your VGA card timing back porch / front porch exceed vesa timing too far, for some new AGP-VGA-CARD such situation always happened
So in your control-panel icon ,select monitor ,setting , advance ,screen-adjust ,at
Size icon, increase step by step slowly, press ""AUTO" key every step you increase the SIZE . repeat the procedure(increase/decrease SIZE one-step and press AUTO) until the interferences disappear, press "APPLY" to save in your VGA

There is interferences in **DOS MODE**

NOTE :the criteria of doing AUTO-CONFIGURATION : must be a full-size screen, if the screen not full , the auto-configuration will fail. So in dos mode ,just set your "CLOCK" in OSD-MENU to zero or use some EDITOR software which can full fill the whole screen (ex: PE2, HE) and then press "AUTO"
Or you can use "DOS1.EXE" which attached in your Driver disk to optimize DOS mode performance

V.THE PANEL LUMINANCE WAS DOWN

Use white pattern and resolution 1280x1024 @ 60Hz , CHROMA 7120 measured the center of panel


Set Contrast, brightness =maximal, RGB= 50
Quit from OSD-screen, measured Y(luminance)
With chroma 7120, check Y= 240±10 cd/m2 ?
OK
If Y can reach ＞240 cd/m2 that means
The lamp still working well, so we just re-do the white-balance process
As following procedure
NG
OK
Use white-pattern, press MENU button along with AC power-plug in (you will in factory mode) The OSD-menu will be at left-top of screen,
If the Y less than 200 cd/m2 (after the contrast, brightness = max) then change the LAMP of panel
press AUTO button to automatically adjust black level value, you will see the sign PASS
Follow **White-Balance, Luminance adjustment** as above (page 8),method to more detail procedure For do a white-balance adjust

6 B). INVERTER –MODULE SPEC &TROUBLE SHOOTING CHART

For LM720 model , use Hydis panel, and the INVERTER is made by SAMPO

SAMPO Parts No: DIVTL0085-D42 AOC Parts No.: 79LL17-3-S

I. CONNECTOR PIN ASSIGMENT:

A) CON1: INPUT

MODEL NO.: S5B-PH-SM3-TB

PIN	SYMBOL	DESCRIPTION
1	Vin	Input voltage: 12V
2	Vin	Input voltage: 12V
3	ON/OFF	ON: 3V OFF:0V
4	Dimming	Dimming range (0V~+5.0V)
5	GND	GND

B) CON2,CON3,CON4,CON5: OUTPUT

MODEL NO.: SM02B-BHSS-1-TB

PIN	SYMBOL	DESCRIPTION
1	HV OUTPUT	Input H.V to lamps
2	RETURN	Return to control

C) FUNCTION SPECIFICATIONS:

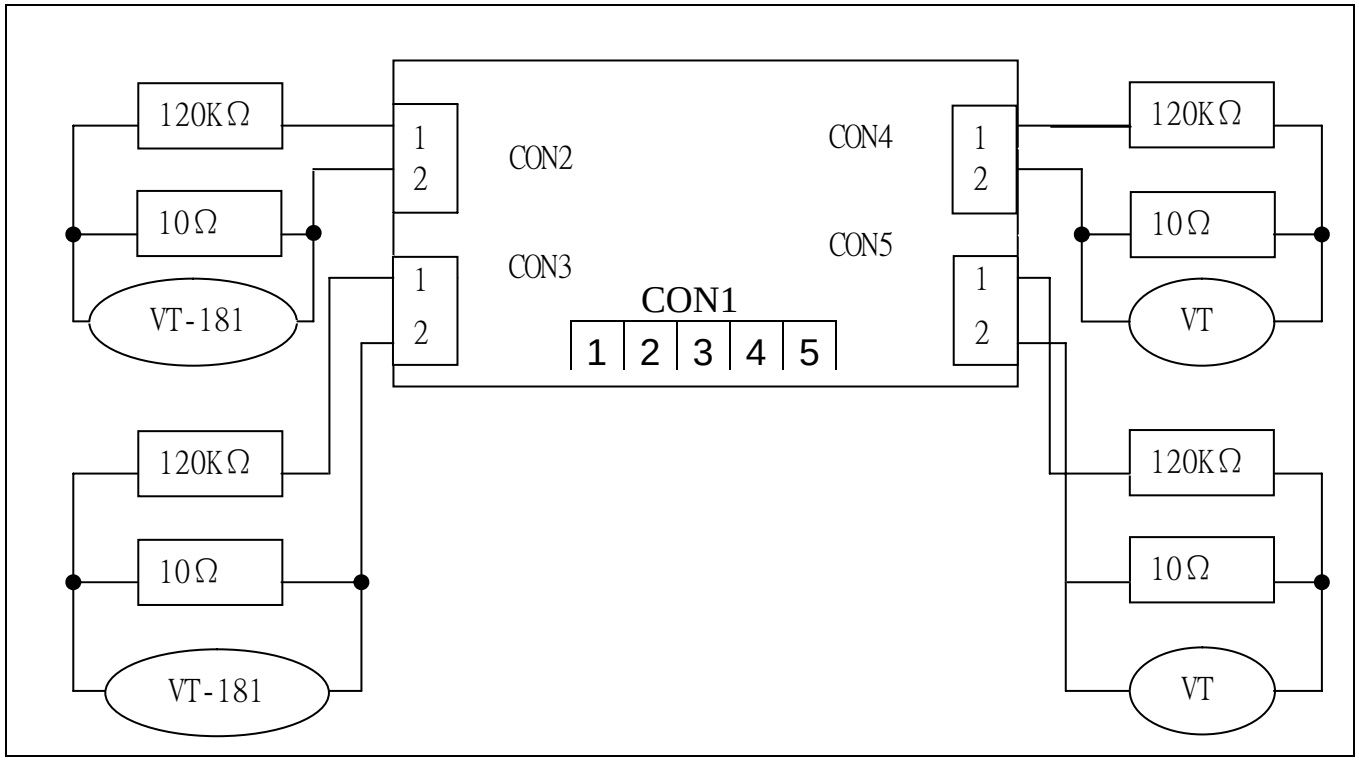
The data test with the set of SAMPO

DC TO DC CONVERTER

(ROOM TEMPERATURE 25℃ ±4℃)

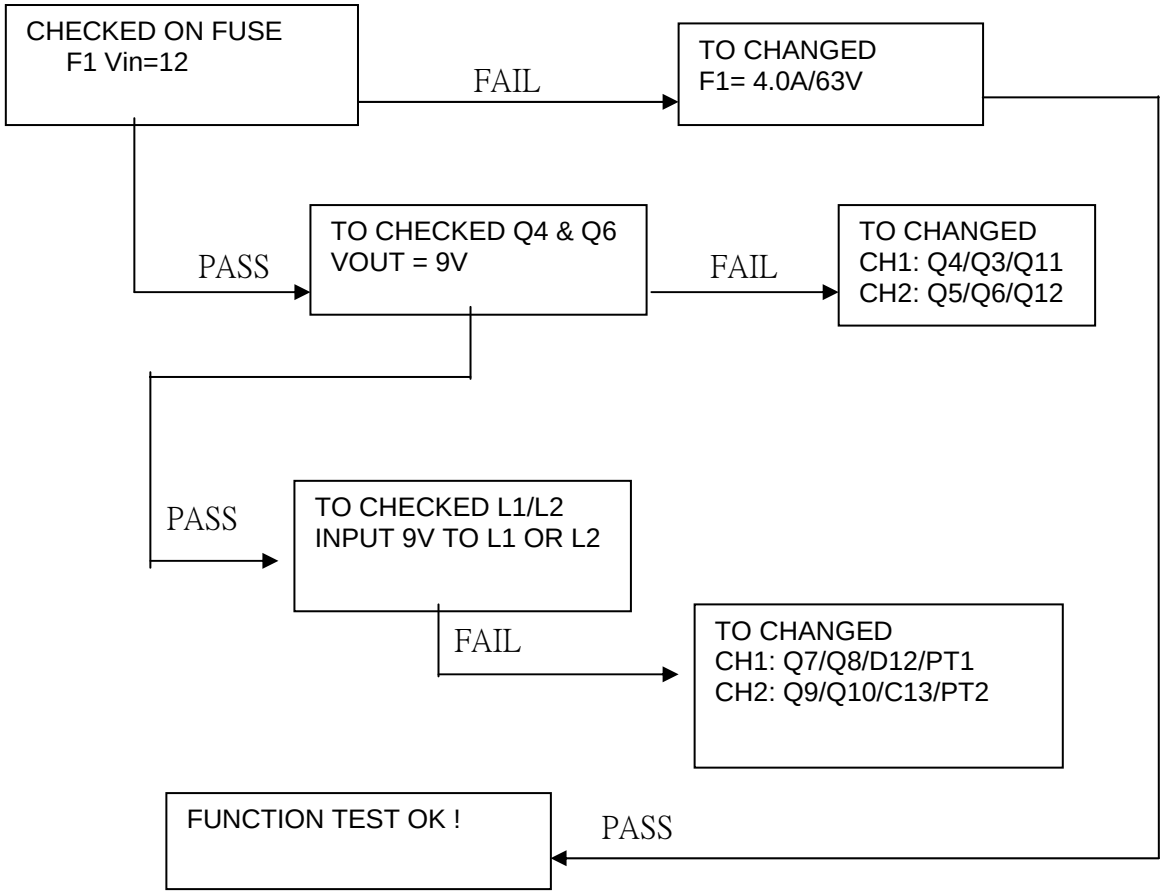
ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
Input voltage	Vin	10.8	12	13.2	V	
Input current	Iin	--	2100	2500	mA	
output current adj:0v(min.)	Iout (min)	2.3	2.6	3.3	mA	FOR 1 CCFL LOAD:120KΩ
Output current adj.:5 v(max.)	Iout (max)	5.5	6.0	6.5	mA	FOR 1 CCFL LOAD:120KΩ
Frequency	F	40	50	60	KHZ	
H.V open	Vopen	1550	1700	1850	Vrms	NO LOAD
H.V Load	Vload	600	700	800	Vrms	RL=120KΩ

D) FUNCTION TEST CIRCUIT:

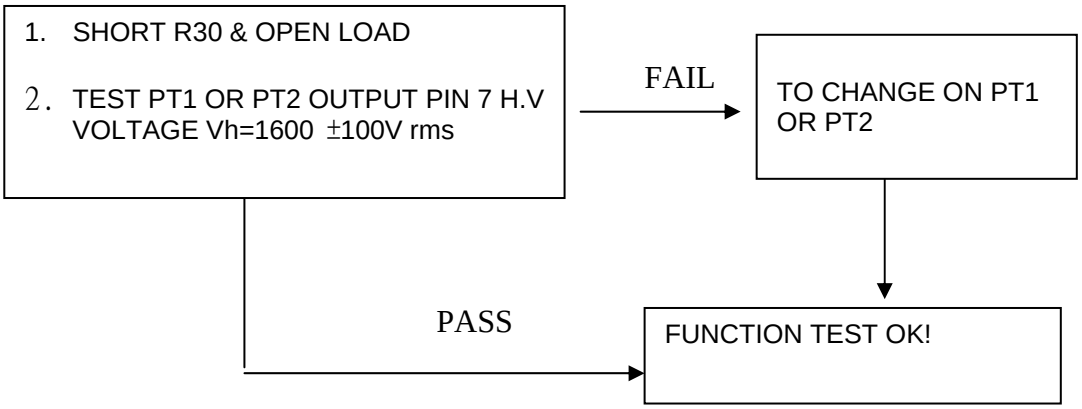


II. TROUBLE SHOOTING BLOCK DIAGRAM

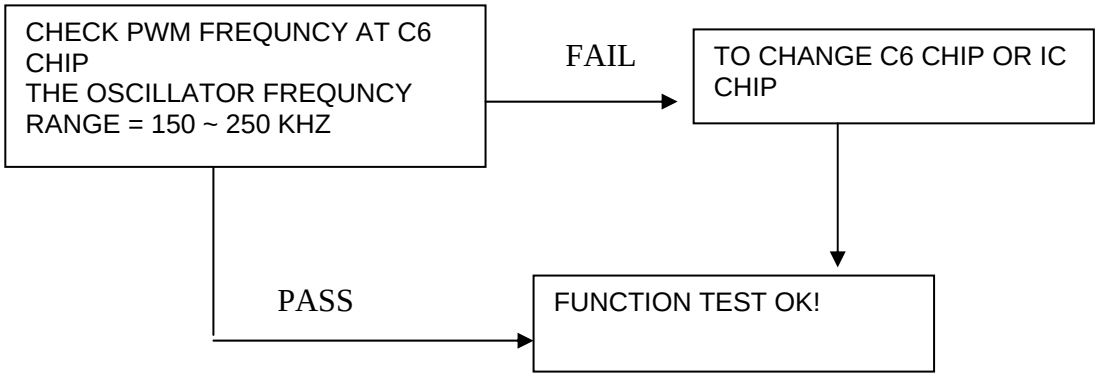
A) NO POWER:



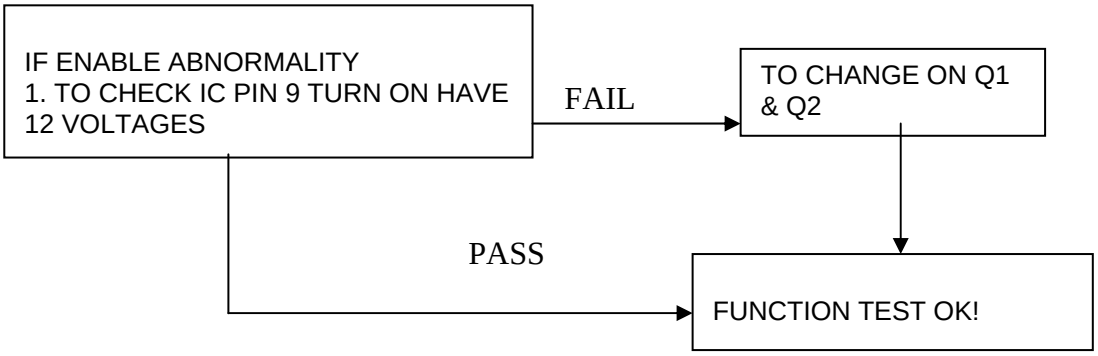
B) HIGHT VOLTAGE PROTECTION:



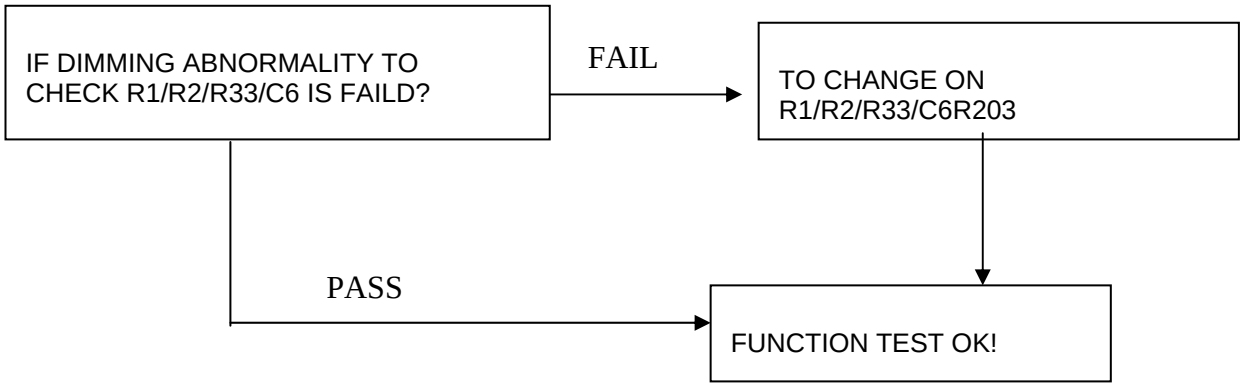
C) OUTPUT CURRENT ABNORMALITY:


CHECK PWM FREQUNCY AT C6 CHIP
THE OSCILLATOR FREQUNCY RANGE = 150 ~ 250 KHZ
FAIL
TO CHANGE C6 CHIP OR IC CHIP
PASS
FUNCTION TEST OK!

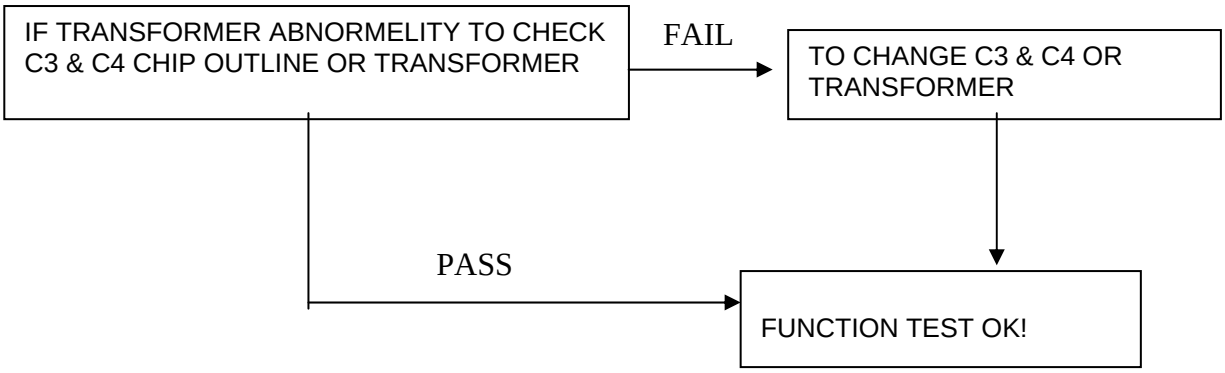
D) ENBALE ABNORMALITY:



E) DIMMING CONTROL ABNORMALITY:



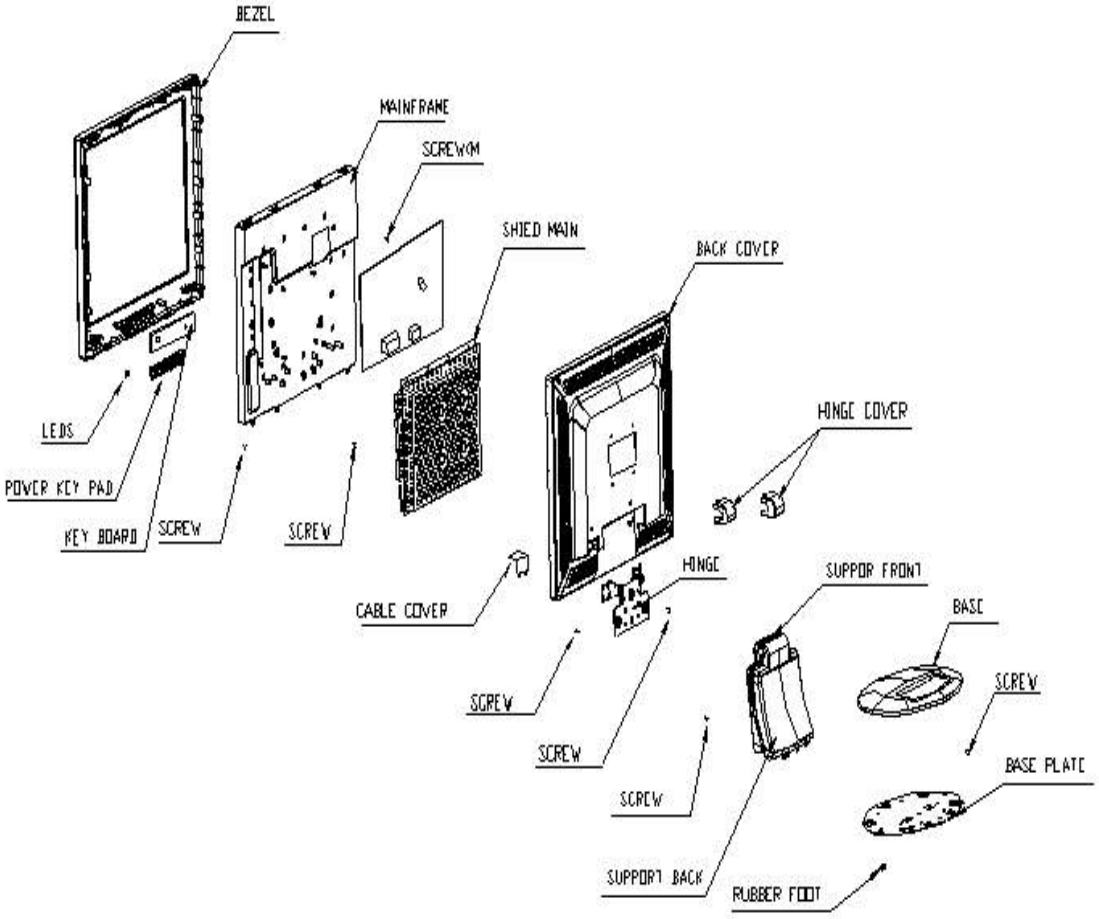
F) TRANSFORMER ABNORMALITY:


IF TRANSFORMER ABNORMELITY TO CHECK C3 & C4 CHIP OUTLINE OR TRANSFORMER
FAIL
TO CHANGE C3 & C4 OR TRANSFORMER
PASS
FUNCTION TEST OK!

G) INSTRUMENTS FOR TEST:

1.	DC POWER SUPPLY	GPS-3030D
2.	AC VTVM	VT:-181E
3.	DIGITAL MULTIMERTER	MODEL-34401
4.	HIGHTVOLT PROB	MODEL-1137A
5.	SCOPE	MODEL-V-6545

7. MECHANICAL OF CABINET FRONT DIS-ASSEMBLY



BILL OF MATERIAL

1	ADPC12416AF	LCD ADAPTER ASS'Y	1 PCS
1	CBPC782KKZAE	CONVERSION BOARD FOR T7	1 PCS
1	DCPC780A7	DC POWER BOARD FOR T780K	1 PCS
1	KEPC782KA6	KEY BOARD FOR T78*	1 PCS
1	7L 1 7	WOODEN PALLET	0.0097 PCS
1	7L 1 60	WOODEN PALLET	0.0097 PCS
1	15L5689 2 A	GND CLAMP	1 PCS
1	15L5689 3 A	GROUND CLAMP	2 PCS
1	15L5695 1	REAR BRACKET	1 PCS
1	15L5709 3	MAIN FRAME	1 PCS
1	15L5791 1	VESA BRACKET	1 PCS
1	33L4344 CA 1L	HINGE COVER (L)	1 PCS
1	33L4344 CA 2L	HINGE COVER(R)	1 PCS
1	33L4345 CA L	CABLE COVER	1 PCS
1	33L4362 1	LENS	1 PCS
1	33L4447 CB L	POWER KEY PAD	1 PCS
1	34L 916 CA 3B	BACK COVER	1 PCS
1	34L 977ACA B	FRONT PANEL	1 PCS
1	40L 152509	RECYCLE LABEL	0 PCS
1	40L 152512	RECYCLE LABEL	0 PCS
1	40L 190786 1A	ID LABEL	1 PCS
1	40L 457716 1A	TCO99 LABEL	1 PCS
1	40L 459786 1A	CARTON LABEL	1 PCS
1	40L 581 26704	酮繷 FOR CARTON/PALLET	0.1 PCS
1	41L 68508 A	恨	0.2 PCS
1	41L1700786 1A	MANUAL	1 PCS
1	41L7800786 1A	WARRANTY BOOKLET	1 PCS
1	41L7800786 2A	TCO'99 CARD	1 PCS
1	44L3231 12 A	EVA WASHER	2 PCS
1	44L3231 13	EVA WASHER	1 PCS
1	44L3705 1	EPS	1 PCS
1	44L3705 2	EPS	1 PCS
1	44L6000 4 6B	SPACE PAPER	0.01 PCS
1	44L6002608 1A	PAPER PLATE	0.01 PCS
1	44L6002608 2A	PAPER PLATE	0.01 PCS
1	44L9003 9	CORNER PAPER	0.0769 PCS
1	44LS705786 1A	CARTON	1 PCS
1	45L 76 28 RN	pe bag	1 PCS
1	45L 77 3	ゴ 饯	173 CM
1	45L 77500	BARCODE RIBBON	19 CM
1	45L 77501	BARCODE RIBBON	0.5 CM
1	45L 88606	PE BAG FOR BASE	1 PCS

	145L 88607	PE BAG FOR MONITOR	1PCS
	150L 500 1	玢紡	1PCS
	150L 600 2	HANDLE1	1PCS
	150L 600 3	HANDLE2	1PCS
	152L 1186	SMALL TAPE	8CM
	152L 1208 A	TAPE	2PCS
	152L6019 1	独ㄧ荡絫溅眩	15CM
	152L6020 1	PROTECT FILM	0.1PCS
｣ 1	79L L17 3 S	INVERTER SAMPO	1PCS
｣ 1	80L L17 2 CH	ADAPTER VER:(01A一盡	0PCS
	185L 594 1	SHIELD MAIN	1PCS
	189L 174L1710E	SIGNAL CABLE	1PCS
｣ 1	89L402C18N GL	POWER CORD	1PCS
｣ 1	89L402C18N YH	POWER CORD WALL OUT FOR	0PCS
	195L8014 5 14	HARNESS	1PCS
	195L8018 30 5	HARNESS	1PCS
	1B1L1030 5128	SCREW	6PCS
	1M1L 330 6128	SCREW	10PCS
	1M1L1030 10128	SCREW	4PCS
	1M1L1740 12128	SCREW	4PCS
	1Q1L 340 12128	SCREW	8PCS
	1Q1L 340 16120	SCREW 4X16	4PCS
	1Q1L1030 10128	SCREW	2PCS
｣ 1	750LLK70300	LCD PANEL HT17E11-300	1PCS
	1705L782KB34016	LCD 催 ASS'Y	1PCS

## PAREN	T NO : ADPC12416AF	LCD ADAPTER ASS'Y	M 舱 家舱
	2ADPC12400AAI	LCD ADAPTER ASS'Y FOR AI	1PCS
	2ADPC12400AD6	LCD ADAPTER A6 ASS'Y	1PCS
	2ADPC12400ASMT	LCD ADAPTER ASS'Y FOR AI	1PCS
2 GND1	9L6002 1	PIN	1PCS
	240L 45762412A	CBPC LABEL	2PCS
	252L 1213600	簧轰溅眩	1PCS
｣ 2 IC903	56L 139 3	PC123FY2 BY SHARP	1PCS
2 NR901	61L 58080 WT	8 OHM NCTR	1PCS
2 R911	61L152M10457F	MOFR 100KOHM +-5% 2W	1PCS
｣ 2 C901	63L 107334 5	0.33UF	0PCS
2 C901	63L107K334 U	MPX 0.33UF,275VAC,+-10%	1PCS
2 C902	65L305M1022E3	1000PF +-20% 400VAC BY	1PCS
2 C903	65L305M1022E3	1000PF +-20% 400VAC BY	1PCS
2 C902	65L305M1022EM	1000PF +-20% 250VAC/40	0PCS
2 C903	65L305M1022EM	1000PF +-20% 250VAC/40	0PCS
2 C916	65L305M3322F2	3300PF +-20% 250VAC/40	0PCS

2 C916	65L305M3322F3		3300PF400VAC/250VAC	1PCS
2 C900	65L305M4722B2		4700 +-20% 400VAC ACFY	0PCS
2 C900	65L305M4722B3		4700PF +-20% 400VAC/25	1PCS
2 C921	67L 215102 3H		綯篥秆篥臂 1000UF 16V	1PCS
2 C922	67L 215102 3H		綯篥秆篥臂 1000UF 16V	1PCS
2 C921	67L 215102 3J		綯篥秆篥臂 1000UF/16V	0PCS
2 C922	67L 215102 3J		綯篥秆篥臂 1000UF/16V	0PCS
2 C921	67L 215102 3K		綯篥秆篥臂 1000UF/16V	0PCS
2 C922	67L 215102 3K		綯篥秆篥臂 1000UF/16V	0PCS
2 C906	67L305L101 4		100UF +-20% 25V	1PCS
2 C904	67L305S10114H		HTR101M2GL33VR	1PCS
	271L 55 2	A	FERRITE BEAD 6.5*5*1.7	1PCS
	271L 55 30		FERRITE BEAD 4.0*2*3	1PCS
2 L901	73L 174 26 T1		LINE LILTER 0.45mm	1PCS
2 L902	73L 253 91 H		CHOKE COIL	0PCS
2 L902	73L 253 91 L		CHOKE BY LI TA	0PCS
2 L902	73L 253 91 S		CHOKE COIL	1PCS
2 T901	80L 600 3 L		X'FMR BY LI TAI	0PCS
2 T901	80L 600 3 T		SRW28EC-T40H017	1PCS
2 LDE1	81L 2 3 2B		BL-B2441J-AA	1PCS
⌋ 2 F901	84L 53 1		FUSE 2A 250V LF-230002	1PCS
2 CN901	87L 501 10		AC SOCKET	1PCS
	289L 171506		DC POWER CORD	1PCS
⌋ 2 BD901	93L 50460 8		BRIDGE 2KBP06M	1PCS
2 D901	93L 6026T52T		RECTIFIER DIODE FR107	1PCS
2 D901	93L 6026W52T		FR107	0PCS
2 D902	93L 6038P52T		PS102R	1PCS
2 D902	93L 6038T52T		FR103	0PCS
	2715L 901 1 4		ADAPTOR	1PCS
	2705L 560 57 03		Q901 ASS'Y	1PCS
	2705L 560 61 03		R930 ASS'Y	1PCS
	2705L 780 93 03		D911 ASS'Y	1PCS

## PAREN	T NO : ADPC12400AA I	LCD ADAPTER ASS'Y FO	M 舱 家舱
	3715L 901 1A 3	42WBOARD	1PCS
3 J901	95L 90 23	TIN COATED	0PCS
3 J902	95L 90 23	TIN COATED	0PCS
3 J903	95L 90 23	TIN COATED	0PCS
3 J904	95L 90 23	TIN COATED	0PCS
3 J905	95L 90 23	TIN COATED	0PCS
3 R919	61L 21024352T	MFR 24K OHM +- 1% 1/6W	1PCS
3 R925	61L 60220252T	CFR 2K OHM+-5% 1/6W	1PCS
3 FB901	71L 55 19 T	FERRITE BEAD 9X3.5X0.8	1PCS

3 IC902	56L 158 2 T	3PIN IC TL431C/T.I.	0PCS
3 IC905	56L 158 2 T	3PIN IC TL431C/T.I.	0PCS
3 IC902	56L 158 4 T A	HTL431	1PCS
3 IC905	56L 158 4 T A	HTL431	1PCS
3 C905	65L 1K152 1T	1.5NF/1KV Z5F+-10%	1PCS
3 C920	65L517K681 2T	680PF 500V +-10% 25P	1PCS
3 C923	67L 305471 3T	470UF 16V	1PCS

## PAREN	T NO : ADPC12400AD6	LCD ADAPTER A6 ASS'Y	X 舱 家舱
	333L6007 1	LENS	1PCS
	340L 100 EW 1B	ADAPTER ID	1PCS
	340L 154501 1	HI-POT GND LABEL FOR M	1PCS
	345L 88525 E	PE BAG	1PCS
	3W33L4477 D T	TOP COVER	1PCS
	3W33L4478 D T	BOTTOM COVER	1PCS

## PAREN	T NO : ADPC12400ASMT	LCD ADAPTER ASS'Y FO	T M 舱 家舱
3 IC901	56L 379 25	UC3842ADM	1PCS
3 Q903	57L 417 4	PMBS3904/PHILIPS-SMT	1PCS
3 Q902	57L 417 6	PMBS3906/PHILIPS-SMT	1PCS
3 R928	61L0603102	CHIPR 1K OHM +-5% 1/16	1PCS
3 R937	61L0603243 1F	CHIPR 2.43KOHM+-1% 1/1	1PCS
3 R936	61L0603931 1F	CHIPR 9.31KOHM+-1% 1/1	1PCS
3 R924	61L0805102	CHIPR 1K OHM +-5% 1/10	1PCS
3 R929	61L0805102	CHIPR 1K OHM +-5% 1/10	1PCS
3 R935	61L0805102	CHIPR 1K OHM +-5% 1/10	1PCS
3 R927	61L0805103	CHIPR 10K OHM +-5% 1/1	1PCS
3 R922	61L0805104	CHIPR 100K OHM+-5% 1/1	1PCS
3 R915	61L0805471	CHIPR 470 OHM+-5% 1/10	1PCS
3 R916	61L0805472	CHIRP 4.7K OHM +-5% 1/	1PCS
3 R917	61L0805472	CHIRP 4.7K OHM +-5% 1/	1PCS
3 R918	61L0805472	CHIRP 4.7K OHM +-5% 1/	1PCS
3 R920	61L0805623	CHIPR 62K OHM +-5% 1/1	1PCS
3 R921	61L0805683	CHIPR 68K OHM+-5% 1/10	1PCS
3 R923	61L1206100	CHIPR 10 OHM+-5% 1/8W	1PCS
3 R931	61L1206100	CHIPR 10 OHM+-5% 1/8W	1PCS
3 R932	61L1206100	CHIPR 10 OHM+-5% 1/8W	1PCS
3 R926	61L1206101	CHIP 100 OHM 5% 1/8W	1PCS
3 R912	61L1206129	CHIP 1.2OHM +-5% 1/8W	1PCS
3 R933	61L1206242	CHIPR 2.4K OHM+-5% 1/8	1PCS
3 R938	61L1206242	CHIPR 2.4K OHM+-5% 1/8	1PCS
3 R905	61L1206304	CHIP 300K OHM 1/8W	1PCS

3 R906	61L1206304	CHIP 300K OHM 1/8W		1PCS
3 R907	61L1206304	CHIP 300K OHM 1/8W		1PCS
3 R908	61L1206304	CHIP 300K OHM 1/8W		1PCS
3 R909	61L1206304	CHIP 300K OHM 1/8W		1PCS
3 R910	61L1206304	CHIP 300K OHM 1/8W		1PCS
3 R934	61L1206471	CHIPR 470 OHM+-5% 1/8W		1PCS
⌋ 3 R901	61L1206684	CHIPR 680K OHM+-5% 1/8		1PCS
⌋ 3 R902	61L1206684	CHIPR 680K OHM+-5% 1/8		1PCS
⌋ 3 R903	61L1206684	CHIPR 680K OHM+-5% 1/8		1PCS
⌋ 3 R904	61L1206684	CHIPR 680K OHM+-5% 1/8		1PCS
3 C913	65L0603101 31	CHIP 100PF 50V NPO		1PCS
3 C910	65L0603102 31	CHIP 1000PF 50V NPO		1PCS
3 C914	65L0603102 32	CHIP 1000PF 50V X7R		1PCS
3 C927	65L0603103 32	0.01UF+-10% 50V X7R		1PCS
3 C908	65L0603104 12	0.1UF +-10% 16V X7R		1PCS
3 C909	65L0603104 12	0.1UF +-10% 16V X7R		1PCS
3 C911	65L0603152 32	CHIP 1500PF 50V X7R		1PCS
3 C928	65L0805104 22	CHIP 0.1uF 25V X7R 080		1PCS
3 C929	65L0805104 22	CHIP 0.1uF 25V X7R 080		1PCS
3 C924	65L0805104 27	CHIP CAP 0.1uF 25V Y5V		1PCS
3 C912	65L0805105 17	chip ceramic cap 1UF 1		1PCS
3 C915	65L0805474 27	CHIP 0.47UF 25U Y5V		1PCS
3 C926	65L0805474 27	CHIP 0.47UF 25U Y5V		1PCS
3 ZD901	93L 39151	MMSZ5248B-SMT		1PCS
3 D904	93L 64 32	LL4148 SMD		0PCS
3 D905	93L 64 32	LL4148 SMD		0PCS
3 D904	93L 6432V	LL4148-GS08		1PCS
3 D905	93L 6432V	LL4148-GS08		1PCS
3 ZD901	93L 39S500 T	19VZENER PIODE		0PCS
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## PAREN	T NO : 705L 560 57 03	Q901 ASS'Y	X 舱	家舱
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3 Q901	57L 724 4	2SK2996		1PCS
	390L 396500 Q	HEAT SINK		1PCS
	3M1L1730 7128	SCREW		1PCS
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## PAREN	T NO : 705L 560 61 03	R930 ASS'Y	X 舱	家舱
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3 R930	61L 2J47859B	WIRE WOUND 0.47 OHM ZW		1PCS
	396L 29 6	SHRINK TUBE UL/CSA		1PCS
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## PAREN	T NO : 705L 780 93 03	D911 ASS'Y	X 舱	家舱
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	390L 396500 D	HEAT SINK		1PCS

3 D911	93L 60226	STPS 20H1.0 SGS-THOMSO	0PCS
3 D912	93L 60226	STPS 20H1.0 SGS-THOMSO	0PCS
3 D911	93L 60227	MBR20100CT	1PCS
3 D912	93L 60227	MBR20100CT	1PCS
	3M1L1730 6128	SCREW M3x6	2PCS
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## PAREN	T NO : CBPC782KKZAE	CONVERSION BOARD FO	8 M 舱 家舱
	2AIC782KKZAE	LCD MAIN BOARD FOR T78	1PCS
2 CN303	33L3802 5H	WAFER 5P RIGHT ANELE P	1PCS
2 CN302	33L3802 9H	WAFER 9P RIGHT ANELE P	1PCS
2 R319	33L8009 2	2 PIN MIN.JUMOER	1PCS
	233L8010 2 L	2PIN SHUNT MINI JUMPER	1
2 CN200	33L8013 14 H	PLUG 14P 90	1PCS
2 CN603	33L801724A H	PIN HEADER 24P 2.0mm	1PCS
	240L 457624 1A	CPU LABEL	1PCS
	240L 45762412A	CBPC LABEL	1PCS
	244L3231 8 A	EVA WASHER	1PCS
	249L 51 1A	箭猳	0.05ML
	251L 500 1	フ溅	3G
	251L6002 2	玃秈警	0ML
	255L 100600 A	ň 盼瞜奎	0.5G
	255L 100603	κ て瞜奎	9.1G
2 U302	56L1125101 K3	WINBOND CPU	1PCS
2 C307	67L305L331 6	330UF +-20% 35V	1PCS
2 C309	67L305L331 6	330UF +-20% 35V	1PCS
2 C310	67L305L331 6	330UF +-20% 35V	1PCS
2 C312	67L305L331 6	330UF +-20% 35V	1PCS
2 C945	67L309L471 3	470UF+-20% 16V	1PCS
2 FB301	71L 55 28	FERRITE BEAD 7.62*5.08	1PCS
2 L906	73L 253124 L	CHOCK	1PCS
2 L905	73L 259 4	200UH +/-5%	1PCS
2 VR501	75L 335103	CFVR 10K OHM +-20%	1PCS
2 X300	93L 22 55	CRYSTAL 20MHz HC-49US	1PCS
2 U201	93L 22 57	OSCILLATOR 50MHZ - 3.3	1PCS
2 J1	95L 900 31	HARNESS	1PCS
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## PAREN	T NO : AIC782KKZAE	LCD MAIN BOARD FOR T	* M 舱 家舱
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	355L 23520	IPA	0.06ML
	355L 100600 A	ň 盼瞜奎	0.5G
	355L 100602	奎籌	0.85G
3 U601	56L 561 5	NT7181F	1PCS
3 U602	56L 561 5	NT7181F	1PCS
3 U200	56L 562 12	gmZAN2	1PCS

3	U304	56L 563 1		LM2596S-5.0 SMT	1PCS
3	U305	56L 563 7		AIC1084-33M	1PCS
3	U202	56L 566 6		SI9953DY-T1	1PCS
3	U904	56L 585 4		AIC1117-33CY	1PCS
3	U905	56L 585 5		RT9164-25CG	1PCS
3	U401	56L 74F 14	P	N74F14D SMT	1PCS
3	U203	56L1133 16		24LC21A/SN	1PCS
3	U300	56L1133 33		M24C16-MN6T	1PCS
3	Q200	57L 417 4		PMBS3904/PHILIPS-SMT	1PCS
3	Q304	57L 417 4		PMBS3904/PHILIPS-SMT	1PCS
3	RP300	61L 125103 8		CHIP AR 8P4R 10KOHM +-	1PCS
3	RP301	61L 125472 8		CHIP AR 8P4R 4.7K OHM+	1PCS
3	JP301	61L0603000		CHIPR 0OHM +-5% 1/16W	1PCS
3	L207	61L0603000		CHIPR 0OHM +-5% 1/16W	1PCS
3	R203	61L0603000		CHIPR 0OHM +-5% 1/16W	1PCS
3	R207	61L0603000		CHIPR 0OHM +-5% 1/16W	1PCS
3	R208	61L0603000		CHIPR 0OHM +-5% 1/16W	1PCS
3	R221	61L0603000		CHIPR 0OHM +-5% 1/16W	1PCS
3	R229	61L0603000		CHIPR 0OHM +-5% 1/16W	1PCS
3	R232	61L0603000		CHIPR 0OHM +-5% 1/16W	1PCS
3	R233	61L0603000		CHIPR 0OHM +-5% 1/16W	1PCS
3	R234	61L0603000		CHIPR 0OHM +-5% 1/16W	1PCS
3	R310	61L0603000		CHIPR 0OHM +-5% 1/16W	1PCS
3	R317	61L0603000		CHIPR 0OHM +-5% 1/16W	1PCS
3	R340	61L0603000		CHIPR 0OHM +-5% 1/16W	1PCS
3	R603	61L0603000		CHIPR 0OHM +-5% 1/16W	1PCS
3	R200	61L0603101		CHIPR 100 OHM +-5% 1/1	1PCS
3	R201	61L0603101		CHIPR 100 OHM +-5% 1/1	1PCS
3	R202	61L0603101		CHIPR 100 OHM +-5% 1/1	1PCS
3	R218	61L0603101		CHIPR 100 OHM +-5% 1/1	1PCS
3	R219	61L0603101		CHIPR 100 OHM +-5% 1/1	1PCS
3	R220	61L0603101		CHIPR 100 OHM +-5% 1/1	1PCS
3	R227	61L0603101		CHIPR 100 OHM +-5% 1/1	1PCS
3	R213	61L0603102		CHIPR 1K OHM +-5% 1/16	1PCS
3	R214	61L0603102		CHIPR 1K OHM +-5% 1/16	1PCS
3	R216	61L0603103		CHIPR 10K OHM +-5% 1/1	1PCS
3	R217	61L0603103		CHIPR 10K OHM +-5% 1/1	1PCS
3	R223	61L0603103		CHIPR 10K OHM +-5% 1/1	1PCS
3	R224	61L0603103		CHIPR 10K OHM +-5% 1/1	1PCS
3	R225	61L0603103		CHIPR 10K OHM +-5% 1/1	1PCS
3	R300	61L0603103		CHIPR 10K OHM +-5% 1/1	1PCS
3	R301	61L0603103		CHIPR 10K OHM +-5% 1/1	1PCS
3	R311	61L0603103		CHIPR 10K OHM +-5% 1/1	1PCS
3	R313	61L0603103		CHIPR 10K OHM +-5% 1/1	1PCS

3 R315	61L0603103	CHIPR 10K OHM +-5% 1/1	1PCS
3 R326	61L0603103	CHIPR 10K OHM +-5% 1/1	1PCS
3 R327	61L0603103	CHIPR 10K OHM +-5% 1/1	1PCS
3 R328	61L0603103	CHIPR 10K OHM +-5% 1/1	1PCS
3 R329	61L0603103	CHIPR 10K OHM +-5% 1/1	1PCS
3 R209	61L0603202	CHIPR 2K OHM+-5% 1/16W	1PCS
3 R210	61L0603202	CHIPR 2K OHM+-5% 1/16W	1PCS
3 R303	61L0603472	CHIPR 4.7K OHM +-5% 1/	1PCS
3 R204	61L0603750	CHIPR 75 OHM+-5% 1/16W	1PCS
3 R205	61L0603750	CHIPR 75 OHM+-5% 1/16W	1PCS
3 R206	61L0603750	CHIPR 75 OHM+-5% 1/16W	1PCS
3 JP202	61L1206000	CHIPR 0 OHM +-5% 1/8W	1PCS
3 JP302	61L1206000	CHIPR 0 OHM +-5% 1/8W	1PCS
3 L204	61L1206000	CHIPR 0 OHM +-5% 1/8W	1PCS
3 L205	61L1206000	CHIPR 0 OHM +-5% 1/8W	1PCS
3 C948	65L0603102 32	CHIP 1000PF 50V X7R	1PCS
3 C949	65L0603102 32	CHIP 1000PF 50V X7R	1PCS
3 C950	65L0603102 32	CHIP 1000PF 50V X7R	1PCS
3 C951	65L0603102 32	CHIP 1000PF 50V X7R	1PCS
3 C952	65L0603102 32	CHIP 1000PF 50V X7R	1PCS
3 C953	65L0603102 32	CHIP 1000PF 50V X7R	1PCS
3 C954	65L0603102 32	CHIP 1000PF 50V X7R	1PCS
3 C955	65L0603102 32	CHIP 1000PF 50V X7R	1PCS
3 C956	65L0603102 32	CHIP 1000PF 50V X7R	1PCS
3 C957	65L0603102 32	CHIP 1000PF 50V X7R	1PCS
3 C229	65L0603103 32	0.01UF+-10% 50V X7R	1PCS
3 C230	65L0603103 32	0.01UF+-10% 50V X7R	1PCS
3 C231	65L0603103 32	0.01UF+-10% 50V X7R	1PCS
3 C232	65L0603103 32	0.01UF+-10% 50V X7R	1PCS
3 C233	65L0603103 32	0.01UF+-10% 50V X7R	1PCS
3 C234	65L0603103 32	0.01UF+-10% 50V X7R	1PCS
3 C251	65L0603103 32	0.01UF+-10% 50V X7R	1PCS
3 C606	65L0603103 32	0.01UF+-10% 50V X7R	1PCS
3 C608	65L0603103 32	0.01UF+-10% 50V X7R	1PCS
3 C614	65L0603103 32	0.01UF+-10% 50V X7R	1PCS
3 C616	65L0603103 32	0.01UF+-10% 50V X7R	1PCS
3 C201	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3 C202	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3 C204	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3 C205	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3 C207	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3 C208	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3 C209	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3 C210	65L0603104 12	0.1UF +-10% 16V X7R	1PCS

3	C211	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C212	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C213	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C215	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C217	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C218	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C219	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C220	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C221	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C222	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C223	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C225	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C226	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C227	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C228	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C237	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C244	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C245	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C246	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C300	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C304	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C308	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C311	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C405	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C601	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C602	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C604	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C618	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C619	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C939	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C940	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C941	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C942	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C944	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C946	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C947	65L0603104 12	0.1UF +-10% 16V X7R	1PCS
3	C250	65L0603330 31	33PF+-5% 50V NPO	1PCS
3	C303	65L0603330 31	33PF+-5% 50V NPO	1PCS
3	C306	65L0603330 31	33PF+-5% 50V NPO	1PCS
3	CP301	65L600M102 8T	1000PF+-20% 50V 8P X7R	1PCS
3	CP302	65L600M102 8T	1000PF+-20% 50V 8P X7R	1PCS
3	C605	67L 312100 3	SMD 10uf +-20% 16V	1PCS
3	C607	67L 312100 3	SMD 10uf +-20% 16V	1PCS
3	C613	67L 312100 3	SMD 10uf +-20% 16V	1PCS

3	C615	67L 312100	3	SMD 10uf +-20% 16V	1PCS
3	C620	67L 312100	3	SMD 10uf +-20% 16V	1PCS
3	C200	67L 312101	3	SMD 100UF +-20% 16V	1PCS
3	C203	67L 312101	3	SMD 100UF +-20% 16V	1PCS
3	C206	67L 312101	3	SMD 100UF +-20% 16V	1PCS
3	C214	67L 312101	3	SMD 100UF +-20% 16V	1PCS
3	C216	67L 312101	3	SMD 100UF +-20% 16V	1PCS
3	C224	67L 312101	3	SMD 100UF +-20% 16V	1PCS
3	C305	67L 312101	3	SMD 100UF +-20% 16V	1PCS
3	C403	67L 312101	3	SMD 100UF +-20% 16V	1PCS
3	C603	67L 312101	3	SMD 100UF +-20% 16V	1PCS
3	C927	67L 312101	3	SMD 100UF +-20% 16V	1PCS
3	C928	67L 312101	3	SMD 100UF +-20% 16V	1PCS
3	C929	67L 312101	3	SMD 100UF +-20% 16V	1PCS
3	C930	67L 312101	3	SMD 100UF +-20% 16V	1PCS
3	C943	67L 312101	3	SMD 100UF +-20% 16V	1PCS
3	C313	67L 312220	3	SMD 22UF +-20% 16V	1PCS
3	C314	67L 312220	3	SMD 22UF +-20% 16V	1PCS
3	L200	71L 57G601		TI3216JIG601-T17A	1PCS
3	L201	71L 57G601		TI3216JIG601-T17A	1PCS
3	L202	71L 57G601		TI3216JIG601-T17A	1PCS
3	L203	71L 57G601		TI3216JIG601-T17A	1PCS
3	L300	71L 57G601		TI3216JIG601-T17A	1PCS
3	L900	71L 57G601		TI3216JIG601-T17A	1PCS
3	L601	71L 59B121		TB160808B12 SMD	0PCS
3	L602	71L 59B121		TB160808B12 SMD	0PCS
3	L603	71L 59B121		TB160808B12 SMD	0PCS
3	L604	71L 59B121		TB160808B12 SMD	0PCS
3	R215	71L 59B121		TB160808B12 SMD	0PCS
3	R237	71L 59B121		TB160808B12 SMD	0PCS
3	R238	71L 59B121		TB160808B12 SMD	0PCS
3	L601	71L 59C121	B	FCM1608C-121T03 SMD	1PCS
3	L602	71L 59C121	B	FCM1608C-121T03 SMD	1PCS
3	L603	71L 59C121	B	FCM1608C-121T03 SMD	1PCS
3	L604	71L 59C121	B	FCM1608C-121T03 SMD	1PCS
3	R215	71L 59C121	B	FCM1608C-121T03 SMD	1PCS
3	R237	71L 59C121	B	FCM1608C-121T03 SMD	1PCS
3	R238	71L 59C121	B	FCM1608C-121T03 SMD	1PCS
3	MTG U	30 87L 202	44	PLCC SMT CONN PD41C-44	1PCS
3	D200	93L 39146		LL5232B SMT	0PCS
3	D201	93L 39146		LL5232B SMT	0PCS
3	D208	93L 39146		LL5232B SMT	0PCS
3	D209	93L 39146		LL5232B SMT	0PCS
3	D210	93L 39146		LL5232B SMT	0PCS

3 D200	93L 39147	TZMC5V6-GS08	1PCS
3 D201	93L 39147	TZMC5V6-GS08	1PCS
3 D208	93L 39147	TZMC5V6-GS08	1PCS
3 D209	93L 39147	TZMC5V6-GS08	1PCS
3 D210	93L 39147	TZMC5V6-GS08	1PCS
3 D200	93L 39149	MLL5232B BY FULL POWER	0PCS
3 D201	93L 39149	MLL5232B BY FULL POWER	0PCS
3 D208	93L 39149	MLL5232B BY FULL POWER	0PCS
3 D209	93L 39149	MLL5232B BY FULL POWER	0PCS
3 D210	93L 39149	MLL5232B BY FULL POWER	0PCS
3 D300	93L 60211	SMB340 BY FULL POWER	1PCS
3 D300	93L 60212	SMB340 SMT	0PCS
3 D303	93L 60219	BAT54C SMT	0PCS
3 D303	93L 60220	BAT54C-GS08	0PCS
3 D303	93L 60230	BAT54C	1PCS
3 D202	93L 64 32	LL4148 SMD	0PCS
3 D203	93L 64 32	LL4148 SMD	0PCS
3 D204	93L 64 32	LL4148 SMD	0PCS
3 D205	93L 64 32	LL4148 SMD	0PCS
3 D206	93L 64 32	LL4148 SMD	0PCS
3 D207	93L 64 32	LL4148 SMD	0PCS
3 D301	93L 64 32	LL4148 SMD	0PCS
3 D302	93L 64 32	LL4148 SMD	0PCS
3 D202	93L 6432U	MLL4148 SMD	0PCS
3 D203	93L 6432U	MLL4148 SMD	0PCS
3 D204	93L 6432U	MLL4148 SMD	0PCS
3 D205	93L 6432U	MLL4148 SMD	0PCS
3 D206	93L 6432U	MLL4148 SMD	0PCS
3 D207	93L 6432U	MLL4148 SMD	0PCS
3 D301	93L 6432U	MLL4148 SMD	0PCS
3 D302	93L 6432U	MLL4148 SMD	0PCS
3 D202	93L 6432V	LL4148-GS08	1PCS
3 D203	93L 6432V	LL4148-GS08	1PCS
3 D204	93L 6432V	LL4148-GS08	1PCS
3 D205	93L 6432V	LL4148-GS08	1PCS
3 D206	93L 6432V	LL4148-GS08	1PCS
3 D207	93L 6432V	LL4148-GS08	1PCS
3 D301	93L 6432V	LL4148-GS08	1PCS
3 D302	93L 6432V	LL4148-GS08	1PCS
	3715L 820 2 2	TF-1780 LCD MAIN BOARD	1PCS

## PAREN	T NO : DCPC780A7	DC POWER BOARD FOR T	* M 舱 家舱
2 J7	33L3252 3 H	WAFER 3P 3.96MM 90	1PCS

2 C71	67L305L331 6	330UF +-20% 35V	1PCS
2 JP2	88L 304 1S	DC POWER JACK	0PCS
2 JP2	88L 3041CE	DC JACK	1PCS
2 F01	95L 90 23	TIN COATED	1PCS
	2715L 919 2	15″ 17″ DC-IN BOARD	1PCS

## PAREN	T NO : KEPC782KA6	KEY BOARD FOR T78*	M 舱 家舱

	2AIK782KA2	KEY BOARD FOR T78*	1PCS
	2AIK782KA2SMT	KEY BOARD FOR T782K* S	1PCS
2 SW101	77L 600 1GHJ	KEY SWITCH	1PCS
2 SW102	77L 600 1GHJ	KEY SWITCH	1PCS
2 SW103	77L 600 1GHJ	KEY SWITCH	1PCS
2 SW104	77L 600 1GHJ	KEY SWITCH	1PCS
2 SW105	77L 600 1GHJ	KEY SWITCH	1PCS
2 LED1	81L 12 1 GP	LED	1PCS
2 JP801	95L8014 9 24	HARNESS	1PCS

## PAREN	T NO : AIK782KA2	KEY BOARD FOR T78*	M 舱 家舱

	3715L 707 1 2	KEPC	1PCS
3 J101	95L 90 23	TIN COATED	0PCS
3 J102	95L 90 23	TIN COATED	0PCS
3 R109	61L 60210252T	CFR 1K OHM+-5% 1/6W	1PCS
3 R101	61L 60210352T	CFR 10K OHM+-5% 1/6W	1PCS
3 R102	61L 60210352T	CFR 10K OHM+-5% 1/6W	1PCS
3 R103	61L 60210352T	CFR 10K OHM+-5% 1/6W	1PCS
3 R104	61L 60210352T	CFR 10K OHM+-5% 1/6W	1PCS
3 R105	61L 60210352T	CFR 10K OHM+-5% 1/6W	1PCS
3 R106	61L 60210352T	CFR 10K OHM+-5% 1/6W	1PCS
3 R107	61L 60210352T	CFR 10K OHM+-5% 1/6W	1PCS
3 R108	61L 60222152T	CFR 220 OHM +-5% 1/6W	1PCS

## PAREN	T NO : AIK782KA2SMT	KEY BOARD FOR T782K*	M 舱 家舱

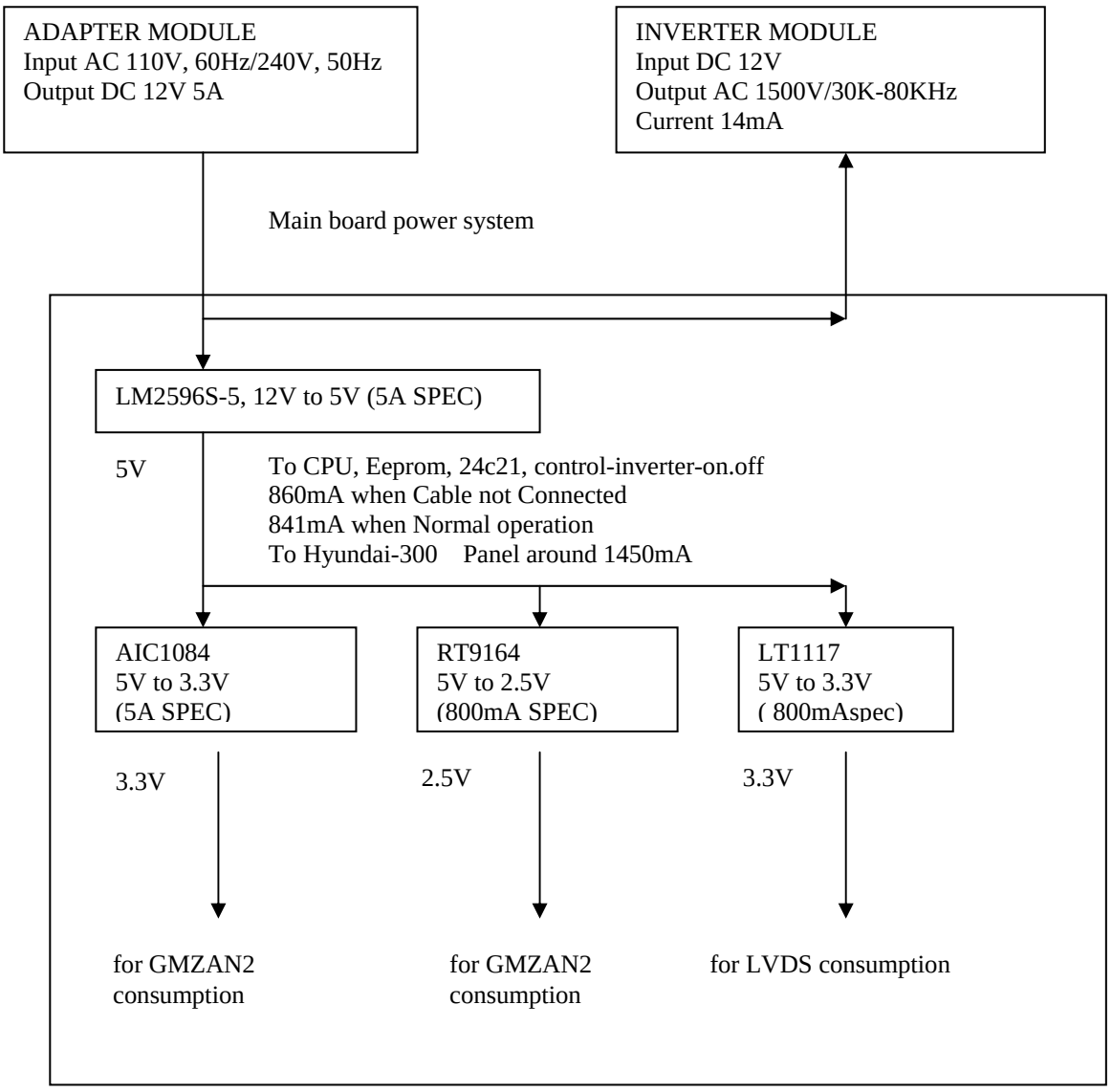
3 Q101	57L 417 4	PMBS3904/PHILIPS-SMT	1PCS
3 Q102	57L 417 4	PMBS3904/PHILIPS-SMT	1PCS
3 C101	65L0805104 32	CHIP 0.1UF 50V X7R	1PCS

## PAREN	T NO : 705L782KB34016	LCD 催 ASS'Y	X 舱 家舱

	212L 381 1	RUBBER FOOT	0PCS
	215L5711 1	BASE PLATE	1PCS
	234L 917 CA B	STAND FRONT COVER	1PCS

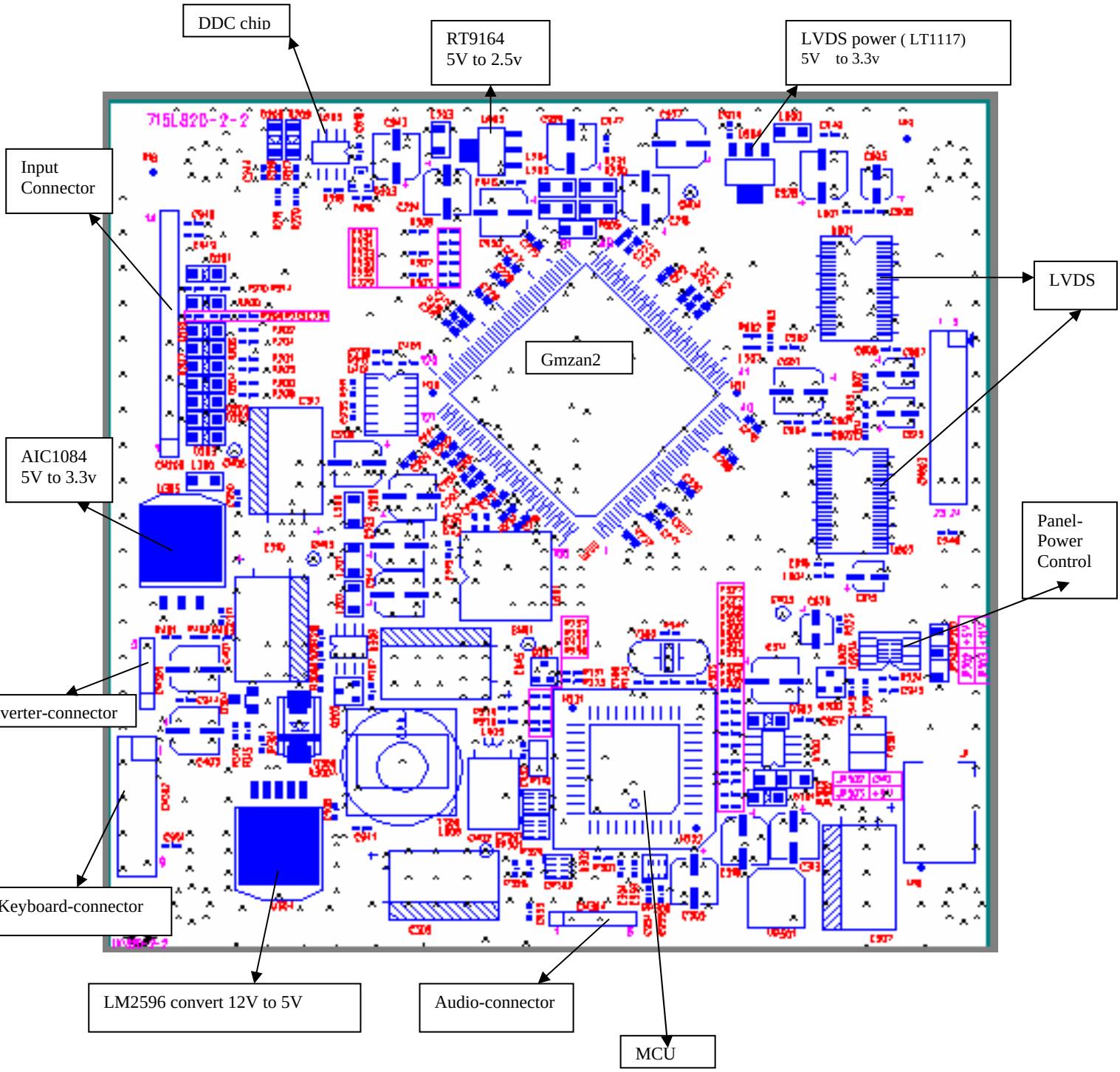
234L 918 CA B		STAND BACK COVER	1PCS
234L 919 CA B		BASE	1PCS
237L 448 1		LCD HINGE	1PCS
2Q1L 140 10128		SCREW	6PCS
2Q1L1030 10128		SCREW	2PCS
2Q1L1030 12128		SCREW	4PCS

9. POWER SYSTEM AND CONSUMPTION CURRENT



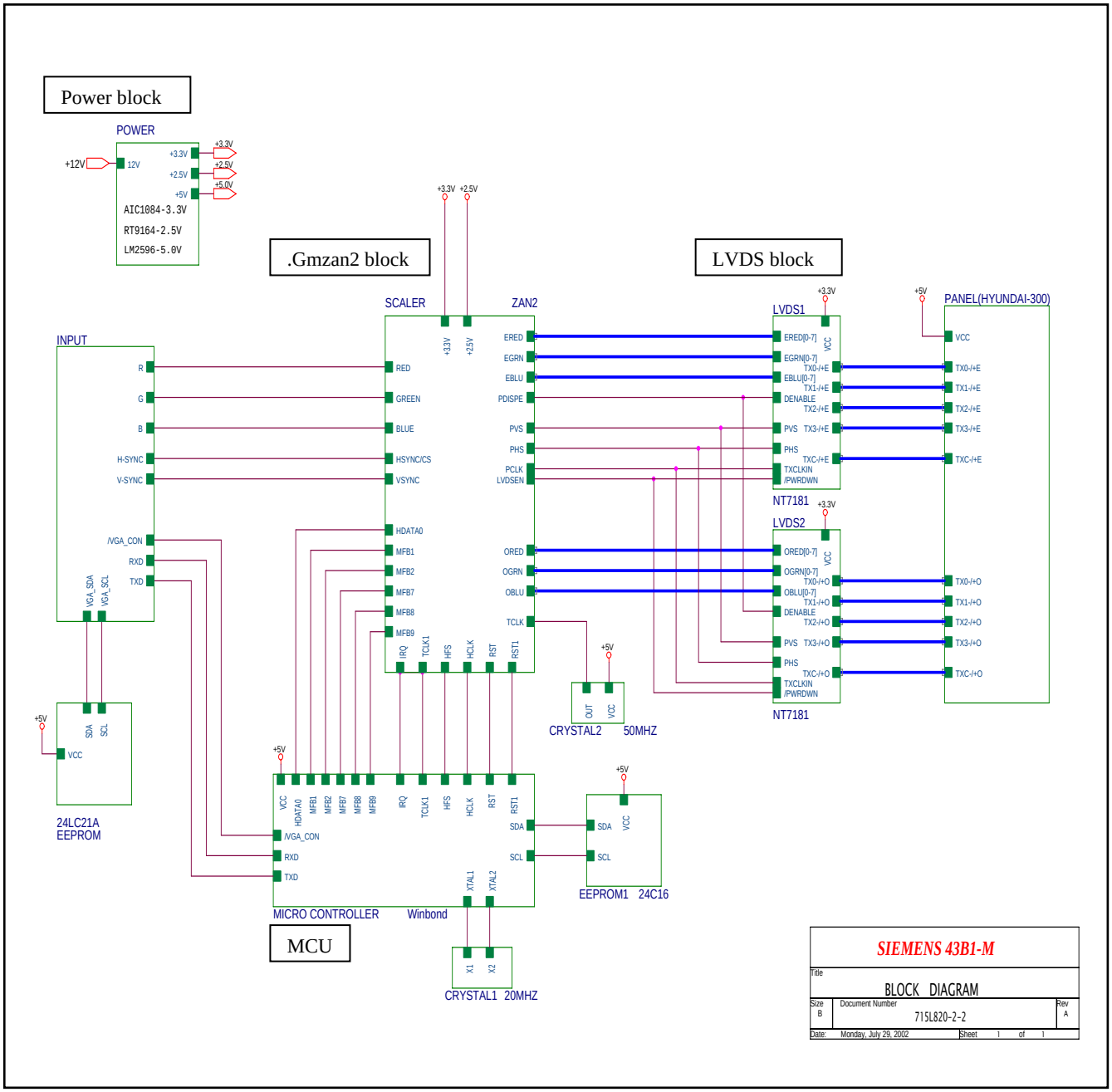
10. PCB LAYOUT

MAIN PCB LAYOUT

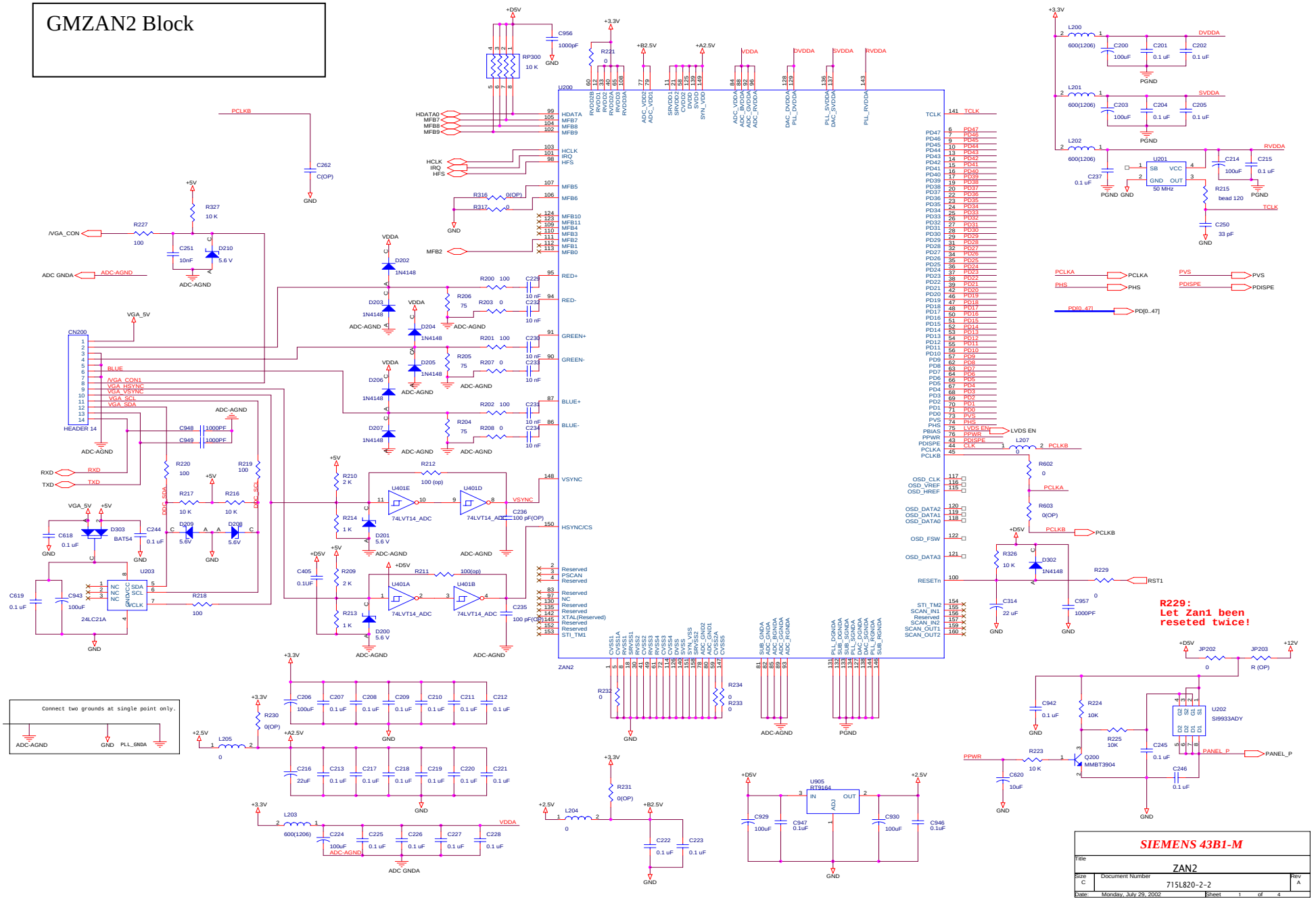


11. SCHEMATIC DIAGRAM

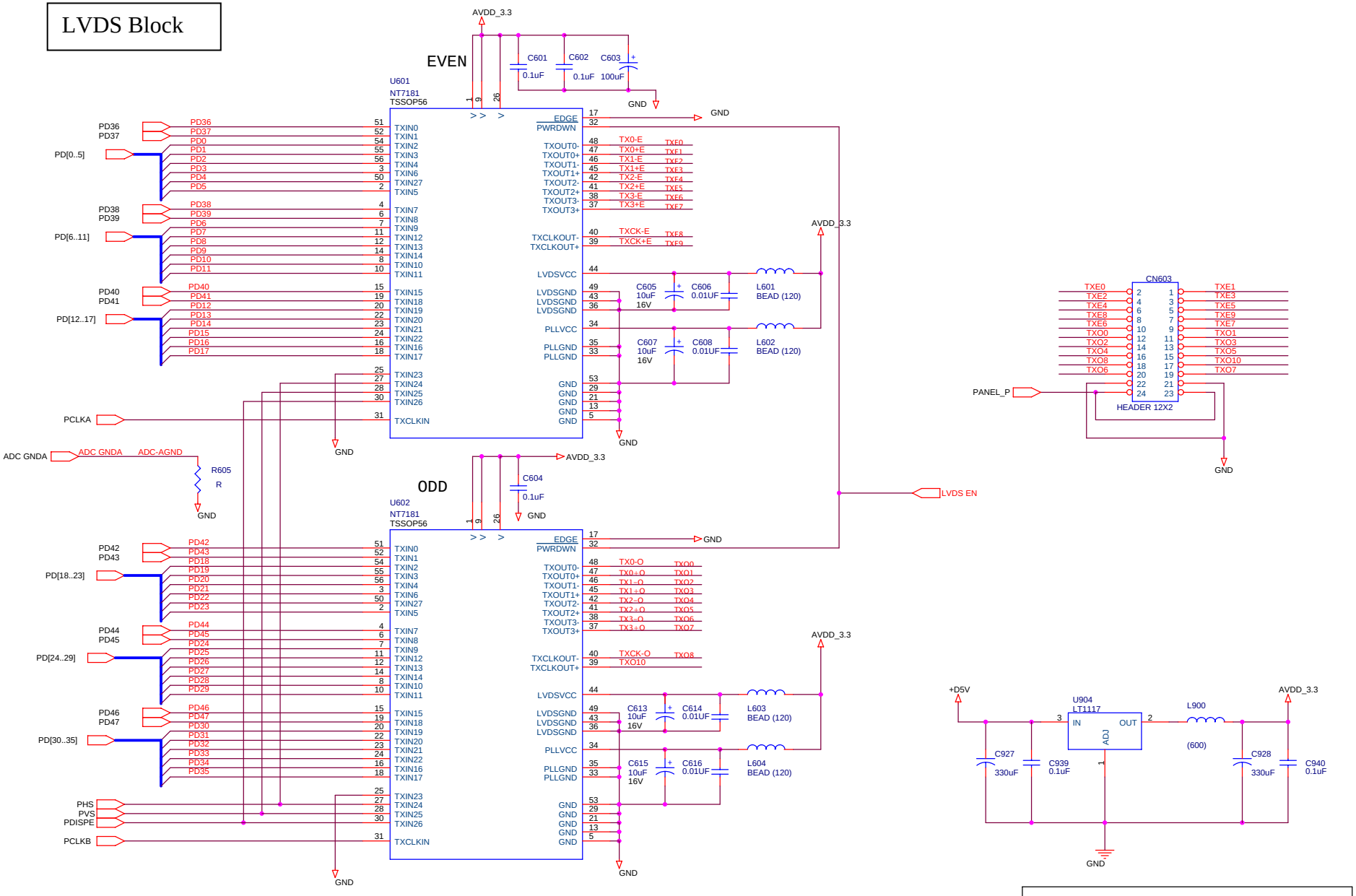
TOP-LEVEL FLOW



GMZAN2 Block



LVDS Block



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Title: LVDS			
Size: Custom	Document Number: 715A820-2-2		Rev: B
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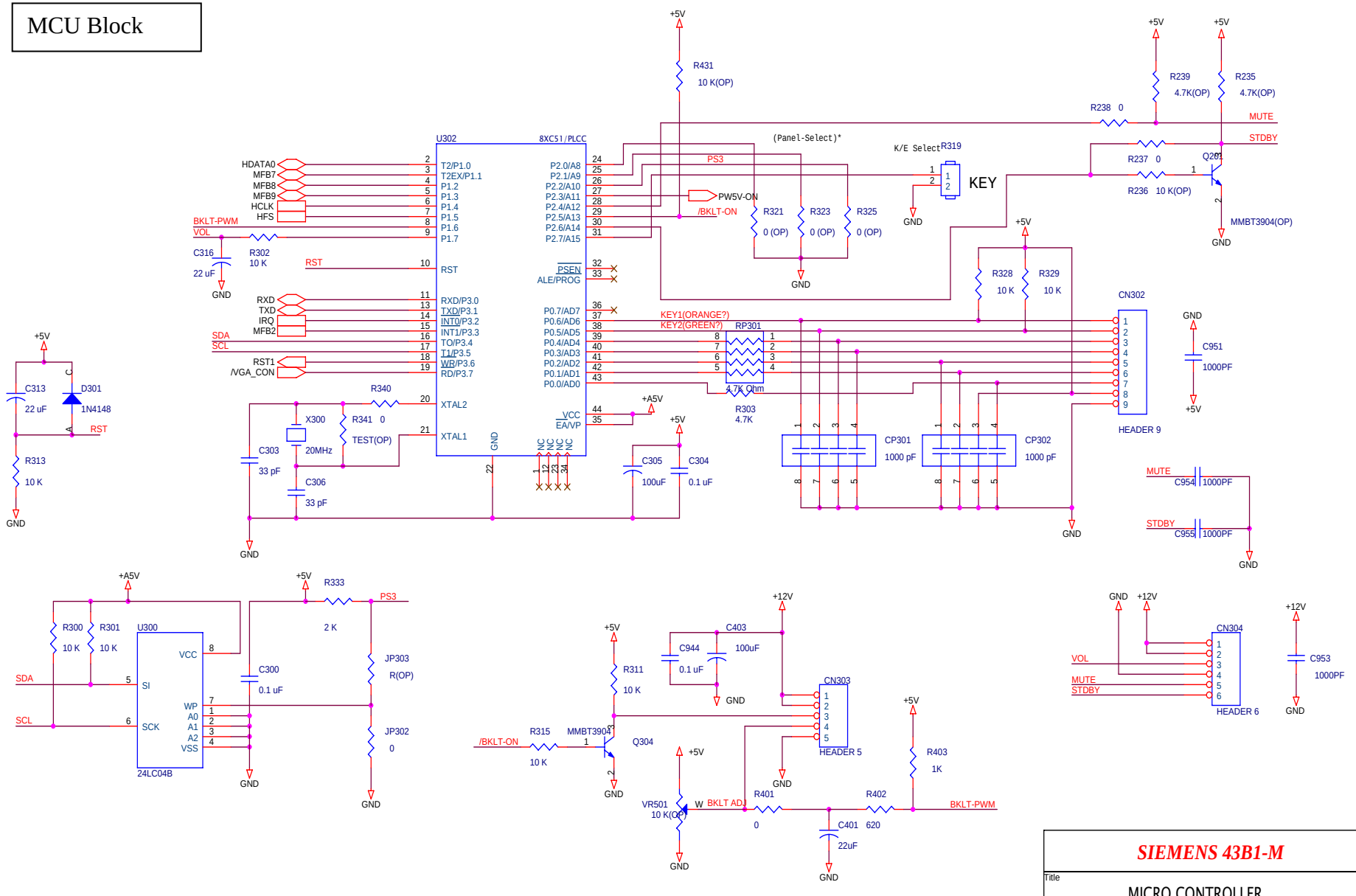
MCU Block



SIEMENS 43B1-M

Title: MICRO CONTROLLER

Size	Document Number	Rev
B	715L820-2-2	B

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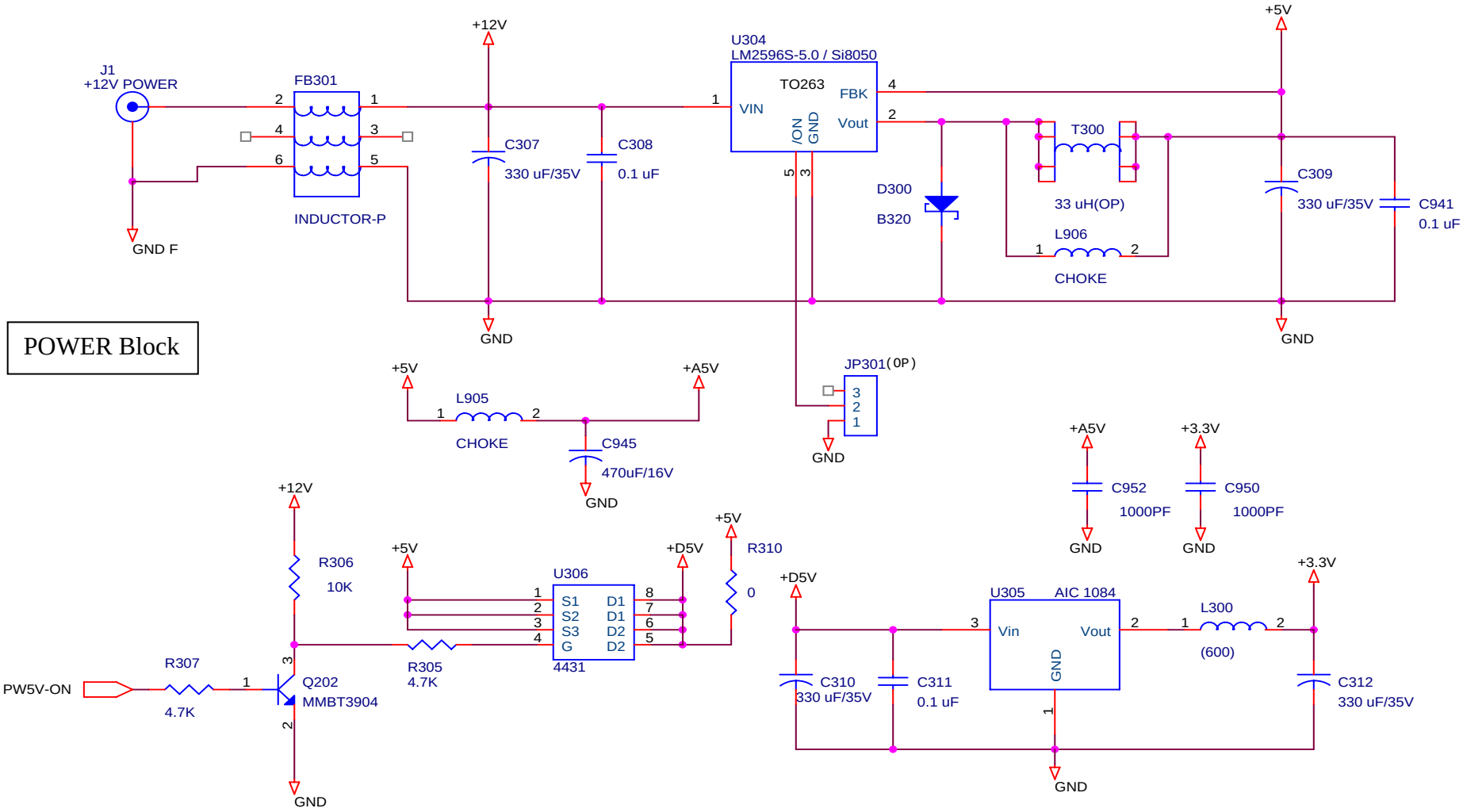

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Title: POWER		
Size: A	Document Number: 715L820-2-2	Rev: A
Date: Monday, July 29, 2002	Sheet 5 of 6	